

ADDENDUM NO. 2

This Addendum is issued prior to Bid due date to revise the Bid/Contract Documents and as such is part of those documents; value of all items shall be included in Bid. After acceptance of Bid, claims for costs will not be considered by reason of failure by Bidder to have read Addenda.

Drawing and Detail Sheets issued with this Addendum:

Drawing # L1-L7
D# February 28, 2017

1.1 LEAD ABATEMENT SCOPE OF WORK

Reference: Drawings L1-L7

- a) Please see attached Section 02 83 12 Lead Clean-up specification and associated drawings defining area of work for the lead abatement.
- b) Lead abatement is to be completed prior to any work being completed in the range firing range upgrade.
- c) Please see attached lead reports for the building for information only.

1.2 EPOXY FLOORING

Reference: Section 09 91 10

- a) Epoxy flooring paint in Lead Abatement area to be as per section 09 91 10 Article 3.6.4 and same manufacturer throughout colour to be selected during the shop drawing stage.

PART 1 GENERAL

1.1 General Requirements

- .1 Read this section in conjunction with all other sections so as to comply with the requirements of Division 1 and the General Conditions of the Contract.
- .2 The site conditions identify the location and condition of all known lead-contaminated surfaces and locations of asbestos-containing materials (ACM) to be disturbed by the work of this contract.
- .3 Unless otherwise shown or specified it is the intent that work performed as per this section will result in the clean-up and/or removal of lead contaminated surfaces and materials and removal and disposal of all ACM included in work of this section.
- .4 The intent of the lead work is to reduce surface lead concentrations on all surfaces of concern to a maximum of 100 micrograms per square foot of area ($\mu\text{g}/\text{ft}^2$).

1.2 Site Conditions

- .1 Lead contamination is present on: all surfaces within the sub-basement; southwest duct shaft, from the 1st to 4th floor; and Air Handling Units 5, 9 and 12 in the penthouse mechanical room. Lead contamination is assumed to be present, but not limited to the following items within the work areas:
 - .1 On all exposed surfaces on floors, walls and ceilings.
 - .2 Inside and outside all HVAC equipment and ductwork.
- .2 Stored items within the storage units are not lead-contaminated.
- .3 The mastic on ducts contains chrysotile asbestos.

1.3 Outline of Work

- .1 Using the procedures of this Section, complete the following:
 - .1 Remove and dispose of lead bullets and other metal debris from the bullet trap area of the range.
 - .2 Remove, clean and dispose of firing range ducts scheduled for demolition. Ducts with mastic shall be disposed of as asbestos waste.
 - .3 Remove, clean and dispose of Air Handling Units 9 and 12 in the penthouse mechanical room. Air handling unit equipment with mastic will need to be disposed of as asbestos waste. Clean ducts that are connected to the air handling units to an extent to accommodate tie-ins to the ducts.
 - .4 Clean all surfaces within the sub-basement, except the stairwells and elevator.

- .5 Clean all surfaces within the southwest duct shaft. The entire duct shaft is to be cleaned as one containment.
- .6 Clean Air Handling Unit 5 and clean ducts that are connected to Air Handling Unit 5, to an extent of approximately 10-15 feet from the unit.
- .7 Isolate the supply and return to the sub-basement, after cleaning Air Handling Unit 5. The hoarding isolation of air handling unit 5 is to be permanent.
- .8 Remove and dispose of ceiling tiles. The ceiling panels in the firing range and the grid are to be removed from the firing range viewing room.
- .9 Clean, by HEPA vacuuming and damp wiping with Ledizolv®, the following:
 - .1 Supply air diffusers and return air grilles.
 - .2 Hard surface flooring (vinyl tile and sheet flooring and finished and unfinished concrete floors).
 - .3 Wall surfaces.
 - .4 Exterior of all HVAC and mechanical equipment present below ceiling.
 - .5 Ceiling, baffles, and bullet trap areas in range.
 - .6 Remove, clean and reinstate supply air diffusers.
 - .7 Clean by HEPA vacuuming and damp wiping with Ledizolv, above ceiling surfaces accessible via removed ceiling tiles including but not necessarily limited to underside of roof deck, joist, beams, conduit, cables, etc.
 - .8 Clean interior of duct work.
- .2 Apply Stonclad GS epoxy to the following surfaces:
 - .1 Concrete floor surfaces in mechanical and storage areas.
Epoxy is not to be applied to concrete surfaces within the firing range.

1.4 Schedule

- .1 Work Hours:
 - .1 Normal Work Hours: 08:00 through 17:00 (Mon. - Fri.).
 - .2 Quiet Hours: 17:00 through 6:00 (Mon. – Fri.) and weekends.

Work in the sub-basement can be completed during Normal Work Hours. Work in the duct shafts and penthouse mechanical room must be completed during Quiet Hours.

1.5 Definitions

- .1 Abatement Consultant: Owner's Representative providing inspection and testing.
- .2 Abatement Contractor: Contractor or sub-contractor performing work of this section.
- .3 Work Area: Area where work takes place which will, or may, disturb lead dust or debris and/or ACM.
- .4 Authorized Visitors: Prime Contractor, Building Owner or Representatives, Abatement Consultant, and persons representing regulatory agencies.
- .5 Competent Worker: A worker who is qualified because of knowledge, training and experience to perform the work, is familiar with the Workplace Health and Safety Act and has knowledge of the potential or actual danger to health and safety in the work.
- .6 DOP Testing (or HEPA Challenge Integrity Test): HEPA Filtered Negative Pressure Machines and HEPA vacuums shall be DOP tested on site by a qualified independent third party to ensure that total penetration from the unit does not exceed 0.03%, or 99.97% efficient of airborne particulate removal. DOP Testing must be in compliance with ASME N510-1989 (1995) and must be performed using a Temporary Mixing Chamber with installed baffles to allow uniform mixing of challenge aerosol. DOP testing company is required to submit a detailed technical report of testing protocol, including Introduction, Methodology, Results, Conclusions, and Recommendations, including results of the Air-Aerosol Mixing Uniformity test as per ASME N510-1989 (1995). DOP testing company must also provide calibration certificates from an independent calibration firm or from the manufacturer of the testing equipment for both the aerosol photometer and the pressure gauge on the aerosol generator dated within 1 calendar year from the on-site testing date. DOP testing company must also provide the National Sanitation Foundation (NSF) certification name and number of the on-site technician performing the testing.
- .7 HEPA Filter: High Efficiency Particulate Air filter that is at least 99.97 percent efficient in collecting a 0.3 micrometre aerosol.
- .8 Polyethylene: Either polyethylene sheeting or rip-proof polyethylene sheeting (as specified) with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide a continuous polyethylene membrane to protect underlying surfaces from damage.
- .9 Occupied Area: Any area of the building outside the Work Area.
- .10 Personnel: All contractors' employees, sub-contractors employees, supervisors.
- .11 Remove: Remove means remove and dispose of (as applicable type of waste) unless followed by other instruction (e.g. remove and turn over to Owner).

1.6 Submittals

- .1 Submit prior to starting work:
 - .1 Schedule.
 - .2 Insurance certificates.
 - .3 Copy of Company Health and Safety Policy and applicable Programs.
 - .4 Pre-removal survey of damage in all areas where lead clean-up will take place.
- .2 Submit the following information regarding personnel prior to starting work:
 - .1 Proof in the form of a certificate that supervisory personnel have attended a training course on lead and asbestos work practices (1 day minimum duration).
 - .2 Proof with references that supervisory personnel has performed supervisory functions on at least five other lead clean-up and five asbestos removal projects.
 - .3 Written statement that personnel have had instruction on lead and asbestos exposure, the use of respirator, protective clothing, worker and waste decontamination procedures, and all aspects of work procedures and protective measures.
 - .4 Certificate proving that each worker on site has been fit-tested for the respirators to be worn.
- .3 Submit the following information regarding HEPA filtered devices prior to start of clean-up work:
 - .1 Performance data on HEPA filtered vacuums including HEPA challenge integrity leak tests performed within the last 3 months.
 - .2 Performance data on negative air units including HEPA challenge integrity leak tests which must be performed on site immediately prior to initial usage and when HEPA filters are changed.
 - .3 HEPA challenge integrity tests to be performed by an independent testing company.
 - .4 Proof of calibration of HEPA challenge integrity leak testing equipment.
- .4 Submit the following prior to isolating the work area:
 - .1 Material Safety Data Sheets for chemicals or material to be used.
- .5 Submit the following upon completion of the work:
 - .1 Manifests, waybills, bills of lading, etc. as applicable for all waste shipments.

1.7 Regulations

- .1 Comply with federal, provincial, and local requirements, provided that in any case of conflict among those requirements or with these Specifications the more stringent requirements shall apply. Work shall be performed under regulations in effect at the time work is performed.

1.8 Supervision

- .1 Provide on-site, a supervisor, with authority to oversee aspects of the work, including but not limited to health and safety, methods, scheduling, manpower and equipment requirements.
- .2 Ensure the supervisor is on site at all times during work at risk of disturbing lead dust. Failure to comply with this requirement may result in a stoppage of work, at no cost to the Owner.
- .3 Provide a minimum of one supervisor for every 10 workers.
- .4 Replace supervisory personnel, with approved replacements, within 3 working days of a written request from the Abatement Consultant. The Abatement Consultant reserves the right to request replacement of supervisory personnel without explanation.
- .5 Do not replace supervisory personnel without written approval from the Abatement Consultant.

1.9 Quality Assurance

- .1 Ensure the removal and handling of lead dust, lead contaminated materials or ACM is performed by persons experienced in the methods, procedures and industry practices of lead abatement.
- .2 Complete work so that at no time airborne lead dust, asbestos or other related particulate, visible solid residue, or water runoff contaminate areas outside the Work Area. The Abatement Consultant is empowered to order a shutdown of work when a leak has occurred or is likely to occur. The costs for additional work by the Abatement Contractor and/or Abatement Consultant to rectify unsatisfactory conditions shall be charged to the Abatement Contractor.
- .3 Perform all work involving other trades such as electrical, mechanical, carpentry, glazing, etc. using licensed persons experienced and qualified for the work required.

- .4 The Abatement Consultant will not be responsible for and will not have control or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs required for the Work in accordance with the applicable construction safety legislation, other regulations or general construction practice. The Abatement Consultant will not be responsible for or have control or charge over the acts or omissions of the Abatement Contractor, his Subcontractors or their agents, employees or other persons performing any of the Work.

1.10 Notification

- .1 Inform all sub-trades of the presence of asbestos and lead as identified in the contract documents.

1.11 Instruction and Training

- .1 Provide instruction and training to all workers and supervisors including the following Instruction and training shall be provided by a competent, qualified person.
 - .1 Hazards of lead and asbestos.
 - .2 Use, care and disposal of protective equipment (including but not limited to respirators and filters) and clothing that would be used and worn during abatement work, including:
 - .1 Limitations of equipment.
 - .2 Inspection and maintenance of equipment.
 - .3 Proper fitting of equipment.
 - .4 Disinfecting and cleaning of equipment.
 - .3 Personal hygiene to be observed when performing the work.
 - .4 The measures and procedures prescribed by this Section.

1.12 Personal Protection

- .1 Protect all personnel at all times when possibility of disturbance of lead and asbestos exists.
- .2 Provide half-face respirators with P100 filters, effective up to 0.5 mg/m³ of airborne lead. Respirators are to be worn by all personnel entering the work area.
- .3 Respirators shall be:
 - .1 Certified by the US National Institute of Occupational Safety and Health (NIOSH).
 - .2 Fitted so that there is an effective seal between the respirator and the worker's face. Ensure that persons required to enter a Lead Work Area are clean shaven daily along the sealing line between the respirator and face.

- .3 Assigned to a worker for exclusive use of the worker.
- .4 Maintained in accordance with manufacturer's specifications.
- .5 Cleaned, disinfected and inspected by a competent person after use on each shift, or more often if required.
- .6 Repaired or have damaged or deteriorated parts replaced.
- .7 Stored in a clean and sanitary location.
- .4 Replace cartridge filters every 8 hours of wear unless tested on site.
- .5 Personnel must have respirators fit checked by qualitative or quantitative fit-testing.
- .6 Provide disposable coveralls, to all personnel, as follows:
 - .1 Water-proof disposable coveralls.
 - .2 Consisting of head covering and full body covering that fits snugly at the ankles, wrists and neck.
 - .3 Replace or repair if torn or ripped.
 - .4 Dispose of protective clothing not to be reused, as contaminated waste.
- .7 Provide nitrile gloves work gloves for all cleaning work and puncture-resistant work gloves as required, to protect the nitrile gloves.
- .8 Wear hard hats, safety shoes and other personal protective equipment required by applicable construction safety regulations.
- .9 Provide instruction to workers before allowing entry to Work Area. Instruction shall include training in respirators, dress, entry and exit procedures from Work Areas, work procedures and protective measures.
- .10 Provide soap and towels for use by all personnel when leaving the Lead Work Area.
- .11 Prohibit smoking, eating, drinking, chewing in the Work Area.

1.13 Work Area Entry Procedures

- .1 Use the following procedure to enter contaminated Work Area:
 - .1 Put on respirator with new or tested filters, and protective clothing in Clean Change Room.
 - .2 Provide dust tight, impermeable nitrile gloves to be worn inside the Lead Work Area. Once gloves are worn they must be treated as lead-contaminated waste and disposed of. Gloves to be taped to protective coveralls to mitigate lead dust exposure.

- .3 Provide cotton or leather palmed gloves to be worn on top of gloves specified above, as required.

1.14 Work Area Exit Procedures

- .1 Use the following procedure to exit contaminated Work Area:
 - .1 Remove gross contamination from protective clothing by HEPA vacuuming or wet wiping.
 - .2 Proceed to Equipment and Access Room and remove all contaminated clothing and equipment except respirator.
 - .3 Store contaminated footwear, clothing, hard hats, etc. in Equipment and Access Room.
 - .4 Dispose of nitrile gloves and disposable coveralls as lead contaminated waste.
 - .5 Remove filters for testing or dispose of in container provided for this purpose.
 - .6 Maintain and clean/disinfect respirator.

1.15 Authorized Visitor Protection

- .1 Provide clean protective clothing to Authorized Visitors.
- .2 Ensure Authorized Visitors have received required training and have their own fitted respirator prior to granting entry into Work Area.

1.16 Inspection and Air Monitoring

- .1 From commencement of work until completion of clean-up operations, the Abatement Consultant will be present daily on site both inside and outside the Abatement Work Area.
- .2 Co-operate with the Abatement Consultant in collection of air samples, including providing workers to wear sampling pumps. Abatement Contractor to exercise care with Abatement Consultant's equipment. The Owner reserves the right to back-charge the Abatement Contractor for further collection of samples damaged by tampering or abuse. In addition, the Abatement Contractor will be responsible for the cost of testing equipment repairs resulting from the actions of the Abatement Contractor's forces.
- .3 The detection of any measureable amount of airborne lead outside the Work Area will indicate lead contamination of these areas and will require the following:
 - .1 Suspend Work within the adjoining Work Area until written authorization to resume Work has been received from the Abatement Consultant.
 - .2 Isolate and clean area in the same manner applicable to the Work Area.

- .3 Maintain Work area isolation, and repeat clean-up operations until visual inspection and air monitoring results are at a level equal to that specified.
- .4 Install additional negative air units at locations specified in response to elevated levels of lead being detected in the Clean Change Room or Occupied Areas at the discretion of the Abatement Consultant.
- .4 Inspection of the Work Area will be performed to confirm compliance with the requirements of the specification and governing authorities. Any deviations from these requirements, not been approved in writing, may result in a stoppage of work, at no cost to the Owner.
- .5 The Consultant is empowered by the Owner to inspect adherence to specified procedures and materials, and to inspect for final cleanliness and completion. Additional labour or materials expended by the Contractor to provide performance to the level specified shall be at no additional cost.
- .6 The Consultant is empowered by the Owner to order a shutdown of work when a leakage of lead and/or asbestos from the controlled work area has occurred or is likely to occur. Additional labour or materials to rectify unsatisfactory conditions shall be at no cost to the Owner.
- .7 Inspection and air monitoring performed as a result of the Contractor's failure to perform satisfactorily regarding quality, safety, or schedule, shall be back-charged to the Contractor.
- .8 Acceptance of the cleanliness of surfaces in the work area, and items to be disposed of as clean, will be based on surface contaminant wipe testing. For the purposes of this specification, surface lead concentrations shall be reduced after cleaning to no more than 100 ug/ft².
- .9 All work of this section involving electrical, mechanical, carpentry, glazing, etc., shall be performed by licensed persons experienced and qualified for the work required.
- .10 The Abatement Consultant is empowered by the Owner to inspect for final cleanliness at completion. Additional labour and/or materials expended by the Abatement Contractor to provide satisfactory performance to the level specified shall be at no additional cost.
- .11 Inspection, air monitoring and lead wipe surface clearance sampling performed because of Abatement Contractor's failure to perform satisfactorily regarding quality, safety, or schedule may be charged to the Lead Abatement Contractor at the Owner's discretion.

- .12 The following Milestone Inspections will take place, at the Owner's cost:
 - .1 Milestone Inspection A - Clean Site Preparation
 - .1 Inspection of preparations and set-up prior to contaminated work in the Work Area.
 - .2 Milestone Inspection B - Visual Clearance
 - .1 Inspection of Work Area after lead clean-up and removal of ACM.
 - .3 Milestone Inspection C - Lead Wipe Sample Clearance
 - .1 Lead wipe sampling after the application of lock-down agent and epoxy floor coating, but prior to removal of Polyethylene from within the Work Area.
- .13 Do not proceed with next phase of Work until written approval of each milestone is received from the Abatement Consultant.

PART 2 PRODUCTS AND FACILITIES

2.1 Materials and Equipment

- .1 All materials and equipment brought to work site must be in good condition.
- .2 Lead Cleaning Solution: Ledizolv® concentrate. Prepare a 2% solution by adding concentrated Ledizolv® to water as follows: 4 teaspoons to 1 quart of water, 1/3 cup to 1 gallon of water, one cup to 3 gallons of water, 1½ cups to 5 gallons of water, or 1 gallon to 49 gallons of water to make a total of 50 gallons.
- .3 Waste Container: An impermeable container acceptable to disposal site and Manitoba Sustainable Development comprised of the following:
 - .1 A six mil (0.15 mm) sealed polyethylene bag, inside a labelled barrel suitable for containing dry lead waste and debris. Container must be acceptable to the hazardous waste hauler and the dumpsite accepting the waste.
- .4 HEPA Vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining particles greater than 0.3 microns in diameter, at 99.97% efficiency.
- .5 Polyethylene Sheeting: 6 mil (0.15 mm) minimum thickness unless otherwise specified in sheet size to minimize joints. New materials only.

- .6 Protective Clothing: Disposable full body coveralls complete with hoods manufactured of a material which does not permit penetration dust or water. Coveralls to fit snugly at ankles, wrists and neck. Acceptable materials: Dupont Tyvek or Kimberly Clark Kleenguard.
- .7 Rip-Proof Polyethylene Sheeting: Minimum requirements 8 mil (0.20 mm) fabric made up from 5 mil (0.13 mm) weave and 2 layers of 1.5 mil (0.05 mm) poly laminate or approved equal. In sheet size to minimize on-site seams and overlaps. New materials only.
- .8 Tape: Duct tape or tape suitable for sealing polyethylene to surfaces under both dry and wet conditions using amended water.

2.2 Hoarding Walls

- .1 Hoarding Wall: 38 mm x 89 mm wood or metal studs at 400 mm o/c with continuous sill and top plate, covered with one layer of rip-proof polyethylene sheeting on each side of wall.

2.3 Decontamination Facilities

- .1 Decontamination Facility: A decontamination facility comprised of two linked rooms, an Equipment and Access Room/Clean Change Room and Contaminated Change Room/Waste and Equipment Decontamination Facility.
 - .1 Rooms shall be separated by curtained doorways at each door.
- .2 Contaminated Change Room/Waste and Equipment Decontamination Facility: Room between Equipment and Access Room/Clean Change Room and Work Area.
 - .1 Install waste container for contaminated protective clothing.
 - .2 Install storage facilities for any personal protective equipment to be reused in Work Area including boots, hard hats, etc., but excluding respirators.
 - .3 Install hooks and shelves as required personal protective equipment.
 - .4 Install a fire extinguisher, mount to wall.
- .3 Equipment and Access Room/Clean Change Room: A room between the Contaminated Change Room/Waste and Equipment Decontamination Facility and Occupied Areas.
 - .1 Install hooks and shelves for storage of respirators.

2.4 Curtained Doorways

- .1 Construct as follows:
 - .1 Install two flap doors, full width and height of door opening at all doors between chambers, facilities and Work Area.

- .2 Construct each flap door of two layers of polyethylene sheeting with all edges reinforced with tape. Use wood strapping to securely fasten flap doors to header and alternate jambs.
- .3 Install weights attached to bottom edge of each door flap.
- .4 Provide direction arrows on flaps to indicate opening.

2.5 Signage

- .1 Post signs at access points to the Work Area and on hoarding walls as follows:
 - .1 CAUTION.
 - .2 Lead and Asbestos Hazard Area.
 - .3 Unauthorized Entry Prohibited.
 - .4 Wear Assigned Protective Equipment.
 - .5 Breathing Dust May Cause Serious Bodily Harm.
- .2 Place placards on vehicles in accordance with Transportation of Dangerous Goods Act.

PART 3 EXECUTION

3.1 Site Preparation

- .1 Maintain emergency and fire exits from Work Area, or establish alternative exits satisfactory to Provincial Fire Marshall and local authorities having jurisdiction. Maintain extra routes from occupied areas. Place emergency exit signs at locations to clearly mark exit route. Seal emergency exit doors so as not to impede use of door during emergency evacuation.
- .2 Install polyethylene enclosure at Work Areas in which lead clean-up and/or asbestos abatement is performed.
- .3 Construct Hoarding Walls between Asbestos Work Area perimeter and occupied areas.
- .4 Install worker decontamination facility at each entrance to each Work Area. A decontamination facility will need to be installed on each floor at each entrance to the duct shafts.
- .5 Install signage in clearly visible locations and in sufficient numbers to adequately warn of a lead and asbestos dust hazard.
- .6 Provide Ground Fault Panels as necessary for the Work Area.
 - .1 Ground Fault Interrupter Panel to be inspected by licensed electrician.
 - .2 Ensure safe installation by licensed electrician.

- .3 Connect to building power at electrical panel outside Work Area.
- .4 Cable to be completely jacketed with no defects. Tag/mark cable as Live.
- .7 Establish negative pressure in the Work Area as follows:
 - .1 Install HEPA filtered negative pressure machines sufficient to maintain pressure differential of -5 Pa between contaminated Work Area and Occupied Areas.
 - .2 Distribute negative air units evenly throughout site.
 - .3 Arrange negative air units to maximize differential pressure in Work Area.
 - .4 Install weighted flaps in perimeter Hoarding Walls as necessary to provide make-up air.
 - .5 Operate HEPA filtered negative pressure machines continuously from first disturbance of lead and/or asbestos until completion of dismantling.
 - .6 Replace prefilters frequently to maintain specified flow rate.
 - .7 Replace HEPA filter as required to maintain flow rate and integrity of unit.
 - .8 Discharge HEPA filtered negative pressure machines to exterior as follows:
 - .1 To building exterior.
 - .1 Remove existing glazing where necessary and replace with a 19 mm plywood panel.
 - .2 Install panel securely in window frame so that it cannot be pushed into the building and make weather-tight with caulking.
 - .3 For each negative pressure unit, provide a 300 mm diameter, screened, duct opening through panel.
 - .4 Direct discharge away from building access points.
 - .5 Upon completion of work, reinstall glazing to match existing.
 - .2 Sub-basement Work Area to be discharged Into Occupied Areas.
 - .1 Install and make airtight all negative air discharge ducting.
 - .2 Use metal reinforced polyethylene discharge ducting in locations where the ducting must be protected from damage or collapse.
 - .3 DOP test all HEPA filtered negative pressure machines where they discharge into Occupied Areas.

3.2 Maintenance of Contaminated Work Area

- .1 Inspect HEPA filtered negative pressure machines including discharge ducting at the beginning and end of each working period.
- .2 Inspect Hoarding Walls and repair as necessary.

- .3 Maintain Work Area in tidy condition.
- .4 Empty HEPA vacuums when either half full or at the end of each shift. The dust generated is so fine that it can reduce the effectiveness of the vacuum, if it collects.

3.3 Lead Cleaning

- .1 At no time is compressed air or compressed air tools to be used.
- .2 Remove ceiling tiles within the sub-basement and place in approved containers.
- .3 All surfaces are to be pre-cleaned with a HEPA vacuum fitted with appropriate attachments including brushes and crevice tools as appropriate for the surface.
- .4 HEPA vacuuming must be followed by a wet cleaning for hard surface non-porous materials including but not limited to floors, exterior of duct work, conduit, walls, underside of metal and concrete decking, steel structure, interior of HVAC equipment, etc. The following wet cleaning methods are acceptable:
 - .1 Container, rinse bucket and clean rags:
 - .1 Wet cleaning rag with Lead Cleaning Solution from the container and wipe surfaces until clean. Re-fold cleaning rag periodically to expose fresh rag for cleaning. Rinse cleaning rag in clean rinse water before re-wetting in 2% solution. Change and dispose of rinse water and rags when dirty. Rinse surface with fresh water and new rag.
 - .2 Spray bottle, rinse bucket and clean rags:
 - .1 Spray Lead Cleaning Solution on surface and wipe off with rinse water rag. Dispose of rinse water and rags when dirty.
 - .3 Mop and two buckets:
 - .1 Use disposable string mop heads. Mop floor with Lead Cleaning Solution. Wring mop in clean rinse water bucket before repeating. Change and dispose of rinse water and mop heads when dirty. Do a final rinse using fresh water.
- .5 Notify Abatement Consultant of completion of cleaning work in each area and co-ordinate final inspection and testing.

3.4 Removal of Ducts and Air Handling Equipment

- .1 Once ducts and air handling equipment are cleaned, remove in sections, ducts and air handling units scheduled for demolition.
- .2 Sections of ducts and air handling equipment that have mastic need to be wrapped with polyethylene and disposed of as asbestos waste.

- .3 Sections of ducts and air handling equipment that have no mastic can be disposed of as scrap metal or recycled.

3.5 Waste Classification

- .1 Wrap ducts and air handling equipment coated with mastic, with polyethylene and disposed of as asbestos waste.
- .2 Sections of ducts and air handling equipment that have no mastic, once cleaned, can be disposed of as scrap metal for recycling.
- .3 Dispose of all other waste generated as lead hazardous waste or leachate test groups of waste.
- .4 Dispose of waste as appropriate based on the leachate testing.
- .5 Transfer wash water to a waste treatment facility.
- .6 Provide unit rates for disposal of any waste that fails leachate testing.

3.6 Waste and Material Handling

- .1 All waste must be cleaned of visible surface dust and placed in a waste container prior to being removed to the disposal bin.
- .2 Wash and transfer for recycling, all metals that have no mastic.
- .3 Clean-up visible materials from waste routes and loading areas after each load. Use procedures of this section for the clean-up of any dust or debris.
- .4 Transport lead-contaminated waste to an acceptable landfill or treatment facility and transport asbestos contaminated waste to licensed landfill.
- .5 Complete the manifests for waste shipping as appropriate for the waste as classified, and in compliance with provincial regulations. The contractor is responsible to ensure completion of manifests for each load leaving the site. Copies to be provided to the Departmental Representative.
- .6 Waste bins must be placed on grade or in Receiving.
- .7 All bins must be covered and locked when waste transfer is not being performed.
- .8 Clean and wash equipment prior to removal from Work Area.
- .9 Place all equipment, tools and contaminated materials that cannot be cleaned in polyethylene bags prior to entering the building.

- .10 Pick-up and drop off of garbage bin shall be at pre-approved times, and must not interfere with the Owners operations.
- .11 Co-operate with Manitoba Sustainable Development inspectors and immediately carry out instructions for remedial work at dump to maintain environment, at no additional cost to the Owner.

3.7 Post Abatement Environmental Testing

- .1 Provide 48 hours notice prior to requiring post clean-up lead testing.
- .2 All surfaces will be tested only after application of epoxy finishes.
- .3 Site must be dry prior to Post Abatement Environmental Testing.

3.8 Work Area Dismantling

- .1 Maintain the isolation of Air Handling Units 9 and 12.
- .2 Dispose of polyethylene, tape, cleaning material, etc. in Waste Containers.
- .3 Remove Signs.
- .4 Seal vacuum hoses and fittings, flexible ductwork and all tools used in contaminated work site in 6 mil polyethylene bags prior to removal from Work Area.
- .5 Notify Owner of completion and arrange for reactivation of air handling equipment serving the areas.

END OF SECTION

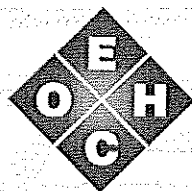
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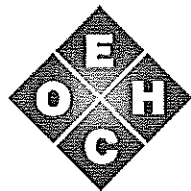
**Winnipeg HQ Building
1091 Portage Ave, Winnipeg, MB.,
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**Lead in Air Worker Risk
Assessment**

April 28, 2016



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April 28, 2016

Project: 16-DKN-225

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Winnipeg MB R3C 3K2

RE: Lead in Air Worker Risk Assessment - Winnipeg HQ Building

Elias Occupational Hygiene Consulting Inc. is pleased to submit our Occupational Hygiene Report on lead in air worker risk assessment at the Winnipeg HQ Building, 1091 Portage Ave, Winnipeg, MB., R3C 3K2. Should you have any questions or require additional assistance please contact Mr. Dennis Nikkel.

Yours truly,

Elias Occupational Hygiene Consulting Inc.

Dennis Nikkel, CIH, ROH, CRSP
Occupational Hygienist

Occupational Hygiene Report

**Winnipeg HQ Building
1091 Portage Ave, Winnipeg, MB., R3C 3K2
Lead in Air Worker Risk Assessment**

Project Number 16-DKN-225

**Date of Survey: April 8, 2016
Date of Report: April 28, 2016**

Survey Performed by:

**Dennis Nikkel, CIH, ROH, CRSP
Elias Occupational Hygiene Consulting Inc.
108 Turnbull Drive
Winnipeg MB
R3V 1X2**

RCMP Thompson Detachment
Winnipeg HQ Building
1091 Portage Ave, Winnipeg, MB., R3C 3K2
Lead in Air Worker Risk Assessment

SCOPE OF PROJECT

This project was carried out to determine if workers' exposures to lead from contamination of the Winnipeg HQ Building, 1091 Portage Ave, Winnipeg, MB., R3C 3K2, from the operation of the firing range are within the exposure limits established in Section 10.19, Control of Hazards, in the Canada Occupational Health and Safety Regulations, SOR/86-304.

INTRODUCTION

C/M Robert Harnum, CD, CPHI(C), B Tech, Occupational Safety Officer- D- Division, requested that an assessment of potential worker exposure to lead be performed following receipt of a report prepared by Pinchin Ltd. This report concluded that various areas of the HQ Building were significantly contaminated by lead. The Pinchin Ltd. report did not make any conclusion regarding worker exposures however. It should be noted that an assessment of potential worker exposure was not within the scope of work for the Pinchin Ltd. Project. C/M Robert Harnum requested that this assessment be performed as soon as possible in order to determine if there was any cause for concern regarding occupant health concerns.

This assessment was conducted to provide an initial assessment of potential worker exposures to lead and is based on the results found in the Pinchin Ltd. report. Based on the limited number of surface contamination results contained in Pinchin Ltd. report in areas other than the sub-basement and Penthouse, sampling of potential worker exposure was conducted predominantly on the south side of the building, and in particular in the south west corner where the air handling room containing the exhaust duct exhausting the firing range located in the sub-basement is located.

Seven area samples and four wipe samples of horizontal surfaces were collected in order to assess potential worker (occupant) exposure to lead.

AIRBORNE EXPOSURE

Airborne lead for the 7 area samples were collected on 25 mm, 5.0 µ PVC filters and analyzed by ICPMS according to NIOSH sampling method 7303.

Worker exposure to airborne chemical agents is regulated by the Canada Occupational Health and Safety Regulations, SOR/86-304. Specifically:

Section 10.19 Control of Hazards

10.19 (1) An employee shall be kept free from exposure to a concentration of

(a) an airborne chemical agent, other than grain dust or airborne chrysotile asbestos, in excess of the value for that chemical agent adopted by the American Conference of Governmental Industrial Hygienists, in its publication entitled *Threshold Limit Values and Biological Exposure Indices*, dated 1994-1995, as amended from time to time;

The ACGIH has established a threshold limit value for lead at 0.05 mg/m^3 .

The sampling locations, sampling rate, sampling time and total volume of air sampled for the area samples are shown in Table 1 below.

TABLE 1: Sample collection data

Location	Sample #	Rate (l/min)	Time (min.)	Sample Volume (m^3)
4th Floor - SW corner VIP Security	A1	1.614	345	0.557
4th Floor - SW corner Pros Data Centre	A2	1.725	342	0.590
3rd Floor - SW corner near lunchroom	A3	1.626	326	0.530
3rd Floor - SE corner corridor	A4	1.680	322	0.541
2A Floor - SE Bedroom Lounge Area	A5	1.640	317	0.520
2nd Floor - office of Rheel Gravel	A6	1.644	312	0.513
1st Floor SE corner Contact & Aboriginal Policing	A7	1.440	285	0.410

TABLE 2: Calculated Lead Exposures

Location	Sample #	Laboratory Results ($\mu\text{g/sample}$)	Sample Volume (m^3)	Lead Exposure mg/m^3
4th Floor - SW corner VIP Security	A1	ND	0.557	ND
4th Floor - SW corner Pros Data Centre	A2	ND	0.590	ND
3rd Floor - SW corner near lunchroom	A3	ND	0.530	ND
3rd Floor - SE corner corridor	A4	ND	0.541	ND
2A Floor - SE Bedroom Lounge Area	A5	ND	0.520	ND
2nd Floor - office of Rheel Gravel	A6	0.0084	0.513	0.000016
1st Floor SE corner Contact & Aboriginal Policing	A7	ND	0.410	ND

With the exception of one sample, the lead concentrations reported by the laboratory performing the analysis were not detectable above the detectable limit for the analysis

(0.005 µg). Based on the data presented in Table 2, the measured airborne exposures for all locations sampled is significantly less than allowable exposures.

SURFACE CONTAMINATION

Potential surface contamination from lead was assessed at 4 locations:

- W 1 - Field Blank
- W 2 - 4th floor VIP Security
- W 3 - 3rd floor, window ledge in SE corridor near A4
- W 4 - 2A floor - SE Bedroom Lounge Area, on top of filing cabinet
- W 5 - 1st Floor SE corner Contact & Aboriginal Policing counter top

Surface contamination levels were collected in accordance with NIOSH 9100 Lead in Surface Wipe Samples by wiping a 100 square centimeter area with Ghost Wipe gauze pads. The Ghost Wipe pads were analyzed for lead by ICPMS according to NIOSH sampling method 7303.

Limited technical literature exists that can be utilized to establish criteria for the level of contamination by heavy metals on surfaces. One directly usable source for acceptable levels of lead contamination on surface specifically in a firing range was found in CHAPTER 42, ANNEX A Effective: 01 Jan 2003 DECONTAMINATION PROTOCOL FOR INDOOR FIRING The acceptable level for lead contamination cited in this report is:

Floors, walls and ceilings, including the exposed structure,-, 0.01 mg/100 cm²
(100 micrograms/ft²);

Table 3 below presents the surface lead contamination levels.

TABLE 3: Horizontal Surface Contamination

Location	Sample #	Laboratory Results (µg)	Surface Contamination (corrected for background - mg/100cm ²)
Field Blank	W 1	0.36	--
4th floor VIP Security	W 2	0.60	0.00024
3rd floor, window ledge in SE corridor near A4	W 3	0.70	0.00034
2A floor - SE Bedroom Lounge Area, on top of filing cabinet	W 4	0.61	0.00025
1st Floor SE corner Contact & Aboriginal Policing counter top	W 5	0.98	0.00062

Based on the data presented in Table 3, horizontal surfaces in the areas test are not considered to be contaminated with lead.

CONCLUSIONS:

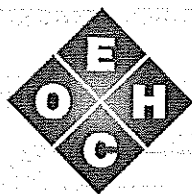
1. Based on the data presented in Table 2, the measured airborne exposures for all locations tested is significantly less than allowable exposures. Building occupants in the areas tested are not being exposed to lead.
2. Based on the data presented in Table 3, horizontal surfaces in the areas test are not considered to be contaminated with lead.

RCMP

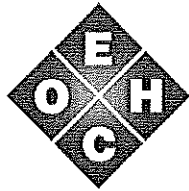
**Winnipeg HQ Building
1091 Portage Ave, Winnipeg, MB.,
R3C 3K2**

**Lead in Air Worker Risk
Assessment**

May 22, 2016



Elias Consulting
Occupational Hygiene



Elias Consulting
Occupational Hygiene

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May 22, 2016

Project: 16-DKN-227

C/M Robert Harnum, CD, CPHI(C), B Tech
Occupational Safety Officer- D- Division
Royal Canadian Mounted Police/
Gendarmerie Royale du Canada
1091 Portage Avenue
Winnipeg MB R3C 3K2

RE: Lead in Air Worker Risk Assessment - Winnipeg HQ Building

Elias Occupational Hygiene Consulting Inc. is pleased to submit our Occupational Hygiene Report on the ongoing lead in air worker risk assessment at the Winnipeg HQ Building, 1091 Portage Ave, Winnipeg, MB., R3C 3K2. Should you have any questions or require additional assistance please contact Mr. Dennis Nikkel.

Yours truly,

Elias Occupational Hygiene Consulting Inc.

Dennis Nikkel, CIH, ROH, CRSP
Occupational Hygienist

Occupational Hygiene Report

**Winnipeg HQ Building
1091 Portage Ave, Winnipeg, MB., R3C 3K2
Lead in Air Worker Risk Assessment**

Project Number 16-DKN-227

**Date of Survey: May 5, 2016
Date of Report: May 22, 2016**

Survey Performed by:

**Dennis Nikkel, CIH, ROH, CRSP
Elias Occupational Hygiene Consulting Inc.
108 Turnbull Drive
Winnipeg MB
R3V 1X2**

RCMP Winnipeg HQ Building

Winnipeg HQ Building 1091 Portage Ave, Winnipeg, MB., R3C 3K2 Lead in Air Worker Risk Assessment

SCOPE OF PROJECT

This project was carried out as an ongoing assessment to determine if workers' exposures to lead from contamination of the Winnipeg HQ Building, 1091 Portage Ave, Winnipeg, MB., R3C 3K2, from the operation of the firing range are within the exposure limits established in Section 10.19, Control of Hazards, in the Canada Occupational Health and Safety Regulations, SOR/86-304.

INTRODUCTION

See the report dated April 28, 2016 for background information.

This assessment was conducted to determine if occupants on the North side of the building and workers who may work near contaminated surfaces in the air shafts where the exhaust from the firing range runs and near the AHU 13 in the penthouse are potentially exposed to lead.

Nine area samples were collected in order to assess potential occupant and worker exposure to lead.

AIRBORNE EXPOSURE

Airborne lead for the 9 area samples were collected on 35 mm, 0.8 μ MCE filters and analyzed by ICP according to NIOSH sampling method 7303.

The sampling locations, sampling rate, sampling time and total volume of air sampled for the area samples are shown in Table 1 below.

TABLE 1: Sample collection data

Location	Sample #	Rate (l/min)	Time (min.)	Sample Volume (m³)
1st Floor - NE side Major Crimes Area	A1	1.547	425	0.658
2nd Floor - NE corner Classroom A	A2	1.534	423	0.649
3rd Floor - NE corner DCAS Analysis storeroom	A3	1.528	469	0.717
4th Floor - NE corner OCC	A4	1.273	419	0.533

Penthouse near AHU 13	A5	1.520	416	0.632
4th Floor - SW air shaft (Room 4109)	A6	1.610	434	0.699
3rd Floor - SW air shaft (across from Room 3107)	A7	1.564	424	0.663
2nd Floor - SW air shaft (across from Room 275C)	A8	1.649	415	0.684
1st Floor - SW air shaft (across from Project Devote)	A9	1.573	407	0.640

TABLE 2: Calculated Lead Exposures

Location	Sample #	Laboratory Results (µg/sample)	Sample Volume (m ³)	Lead Exposure mg/m ³
1st Floor - NE side Major Crimes Area	A1	ND	0.658	ND
2nd Floor - NE corner Classroom A	A2	ND	0.649	ND
3rd Floor - NE corner DCAS Analysis storeroom	A3	ND	0.717	ND
4th Floor - NE corner OCC	A4	ND	0.533	ND
Penthouse near AHU 13	A5	ND	0.632	ND
4th Floor - SW air shaft (Room 4109)	A6	ND	0.699	ND
3rd Floor - SW air shaft (across from Room 3107)	A7	ND	0.663	ND
2nd Floor - SW air shaft (across from Room 275C)	A8	ND	0.684	ND
1st Floor - SW air shaft (across from Project Devote)	A9	ND	0.640	ND

All of the lead concentrations reported by the laboratory performing the analysis were not detectable (ND) above the detectable limit for the analysis (0.8 µg). Based on the data presented in Table 2, the measured airborne exposures for all locations sampled is significantly less than allowable exposures.

CONCLUSIONS:

Based on the data presented in Table 2, the measured airborne exposures for all locations tested is significantly less than allowable exposures. Building occupants on the North side of the building and workers who may enter the SW air shaft where the exhaust duct from the firing range runs or work near AHU 13 are not being exposed to airborne lead.



**HDK Consulting
Winnipeg, Manitoba**

**Lead Assessment
RCMP D Division
Date November 23, 2016**



Elias Consulting
Occupational Hygiene



Elias Consulting
Occupational Hygiene

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November 23, 2016

Project: 16-A-265

Kellie Orr
President
HDK Consulting
2633 Portage Avenue
Winnipeg, MB R3J 0P7

Re: Lead Assessment – RCMP D Division

Elias Occupational Hygiene Consulting Inc. is pleased to submit our Occupational Hygiene Report for the RCMP D Division lead assessment. Should you have any questions or require additional assistance please contact Alison Reineke.

For Elias Occupational Hygiene Consulting Inc.

Alison Reineke, BHEc, BSc, CIH, ROH, CRSP
Occupational Hygienist

Occupational Hygiene Report

**Lead Assessment
RCMP D Division**

HDK Consulting

Project Number 16-A-265

**Date of Survey: November 16, 2016
Date of Report: November 23, 2016**

Survey Performed by:

**Alison Reineke, BHEc, BSc, CIH, ROH, CRSP
Elias Occupational Hygiene Consulting Inc.
108 Turnbull Drive
Winnipeg, Manitoba
R3V 1X2**

HDK Consulting

Lead Assessment RCMP D Division

SCOPE OF PROJECT / BACKGROUND

This assessment was carried out in order to determine the extent of the lead contamination in the Penthouse of RCMP D Division. The assessment continues what was previously performed by Pinchin.

METHOD

19 wipe samples were collected from a 100 cm² area and analyzed by Schneider Laboratories Global following EPA method 7000B/3050B.

Samples were collected from the following locations in the penthouse:

- P04
 - A total of 9 samples were collected from P04, however analysis was performed on a “stop positive” basis as previously discussed. Only 1 sample was analyzed.
- P05
 - A total of 4 samples were collected from P05, however analysis was performed on a “stop positive” basis as previously discussed. Only 1 sample was analyzed.
- Incinerator room
- Computer room
- Operator room
- Stairwell
- Inside AHU 1, 2, 3, 5, 6, 7, 8, 10, 11, & 12

AHU 4 was not tested as it has been previously determined to contain lead dust.

RESULTS

The amount of lead on various surfaces in the penthouse are shown in Table 1 below. Locations of samples collected in P04 and P05 are in Appendix A.

There is currently no Manitoba standard for surface lead contamination. For consistency, the same criteria as used in the Pinchin report from March 16, 2015 will be used here as

well. The DND standard of a maximum of 100 micrograms of lead per square foot ($\mu\text{g}/\text{ft}^2$) for walls, floors, and ceiling after an indoor range has been remediated.

Table 1. Concentration of lead dust on various surfaces.

Location	Lead, $\mu\text{g}/\text{ft}^2$
Incinerator Room	< 93
Computer Room	401
Operator Room	229
Stairwell	< 93
Blank 1	< 93
AHU 1	1333
AHU 2	1213
AHU 3	728
AHU 5	814
AHU 6	935
AHU 7	< 93
AHU 8	728
AHU 10	1139
AHU 11	2037
AHU 12	1213
P05-1	453
Blank 2	< 93
P04-1	349
Blank 3	< 93

DISCUSSION / RECOMMENDATIONS

The Incinerator Room, Stairwell, and AHU 7 do not to require decontamination.

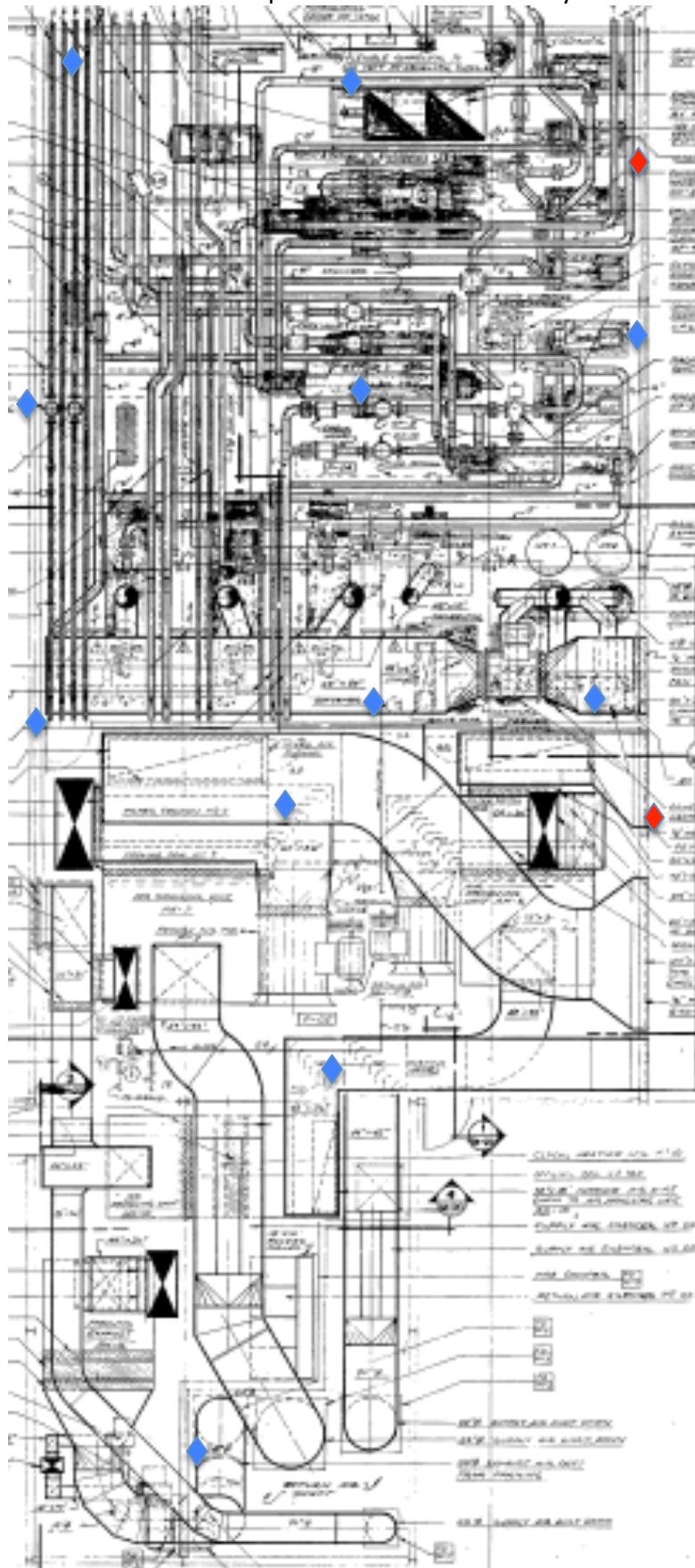
The following locations require remediation.

- P04
- P05
- Computer room
- Operator's room
- AHU 1, 2, 3, 5, 6, 8, 10, 11, & 12

Appendix A Locations of Samples collected in P04 & P05.

Red diamonds are samples that were analyzed

Blue diamonds are samples collected but not analyzed.





April 4, 2016

HDK Consulting Incorporated
55-81 Garry Street
Winnipeg, MB R3C 4J9

E-mail: kellie.orr@hdk.consulting.com

Attention: Kellie Orr

Re: Summary of Lead Dust Assessment and Recommendations
1091 Portage Avenue, Winnipeg, MB
Pinchin File: 111433

Pinchin conducted a program of lead wipe testing in the firing range, penthouse mechanical room and throughout the sub-basement of 1091 Portage Avenue, Winnipeg and issued a report on this work on March 16, 2016. This letter summarizes the findings and recommendations of the report.

FINDINGS AND DISCUSSION

The lead wipe results indicate that there is significant lead contamination on surfaces in the sub-basement firing range, ceiling space in the corridor adjacent to the firing range and penthouse air handling unit room. There is a moderate amount of lead contamination in the southwest duct shaft rooms and throughout the sub-basement. In the sub-basement the higher levels of lead contamination were found on top of ducts with moderate levels of lead contamination on the floors, and other surfaces that are typically not routinely cleaned, such as shelves. Significant lead contamination was not found on stored items in the storage units. The northeast duct shaft rooms have low levels of lead contamination. Firing ranges are typically contaminated with surface lead and it is expected that there would be some leakage from the ducts and filters, and also from transfer of dust by tracking out of the equipment.

The elevated lead contamination found throughout the sub-basement and penthouse indicates that there is a leakage of lead. This contamination may have come from airborne dust leaking from the exhaust duct or from the firing range through penetrations in the wall between the range and the adjacent areas, or from tracking of dust from the firing range.

RECOMMENDATIONS

Pinchin recommends the following:

1. Consider offering a one-time round of blood monitoring for lead to all staff who might have concerns over contact with lead contamination.



2. Retain a hazardous materials abatement contractor to conduct a Type 3 clean-up of lead-contaminated surfaces in the firing range and penthouse mechanical room prior to the firing range upgrade and throughout the sub-basement and duct shafts. The clean-up is to include all surfaces in the areas excluding stored items as lead wipe samples taken on stored items indicates that there is no elevated levels of lead contamination on the items. Any ceiling tiles in the areas should be considered to be contaminated and disposed of as lead-contaminated waste.
3. Pinchin recommends that all areas found to be contaminated with lead and accessible to employees be cleaned as soon as possible. However, if the lead clean-up is phased at different times or is not completed immediately, the RCMP has the responsibility to implement interim risk management control measures to ensure the safety of any person entering the lead contaminated areas. The RCMP should inform the Health and Safety Committee and consult with them in the development of these controls. Procedures should include assessing the risk of lead contamination to workers and people entering the contaminated areas. Staff that have a higher risk of lead exposure need to be provided with personal protection such as disposable gloves and possibly disposable coveralls, depending on degree of surface dust contact anticipated in the task. Maintenance activities will need to be reviewed to determine the risk of lead exposure. Any maintenance work will require the use of disposable gloves and disposable coveralls with pre-wiping the surfaces that will be worked on with a wet rag if the work is expected to take less than four hours. If work will take greater than four hours additional precautions will need to be taken. The wipers, gloves and coverall should be managed as contaminated waste. The RCMP may wish to hold this waste aside, sealed in 6 mil garbage bags, for the abatement contractor to take away during the main abatement project. Pinchin recommends a meeting to review and finalize these interim work practices.
4. Routinely inspect the firing range exhaust ducts for leaks and repair any leaks to ensure that no further lead contamination occurs.
5. Inspect the walls around the firing range to check for possible leakage routes. Seal any openings that have the potential to transport airborne dust to other areas of the building.
6. Ensure that proper procedures are followed when changing the filters of the firing range air handling unit to ensure that there is no leakage of lead.
7. Going forward, after the lead clean-up, periodic lead wipe sampling to check if surfaces are being re-contaminated with lead.



Summary of Lead Dust Assessment and Recommendations

1091 Portage Avenue, Winnipeg, MB
HDK Consulting Incorporated

April 4, 2016
Pinchin File: 111433

Should you have any questions regarding the contents of this letter, please contact the undersigned.

Yours truly,

Pinchin Ltd.

Prepared by:

Reviewed by:

Chris Smithson

Project Manager

204.452.0983 ext. 2245

csmithsin@pinchin.com

Bruce Stewart, B.Sc., DOHS, CIH, ROH

Executive Vice President, Technical Services

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Template: Master Letter Template, December 29, 2015



March 16, 2016

HDK Consulting Incorporated
55-81 Garry Street
Winnipeg, MB R3C 4J9

E-mail: kellie.orr@hdkconsulting.com

Attention: Kellie Orr
Communications and Security Engineering, President

Re: Surface Lead Contamination Associated with Basement Firing Range
1091 Portage Avenue, Winnipeg, MB
Pinchin File: 111433

Pinchin Ltd. (Pinchin) has been retained by HDK Consulting Incorporated (Client) to conduct surface lead testing at the RCMP D-Division building located at 1091 Portage Avenue, Winnipeg, MB. The request came about in response to a planned firing range upgrade. It is expected that firing ranges and the exhaust systems that serve them will be contaminated with settled lead dust. It is also possible that areas surrounding the range and exhaust systems may be contaminated with lead dust.

The two objectives of this project were to:

- Determine the extent of lead contamination on surfaces within the firing range, within the penthouse air handling unit room, and on adjacent surfaces along the path of the firing range exhaust ducts, and
- Prepare specifications for the abatement of the lead contamination found by this testing.

1.0 SCOPE OF WORK

On February 4, 2016, Pinchin collected 41 wipe samples and four quality control field blank samples, to measure the concentration of surface lead contamination. Nine of the samples were collected from surfaces within the sub-basement firing range, three samples were collected from surfaces within the sub-basement corridor adjacent to the firing range, seven samples were collected within the exhaust duct shafts, 20 samples were collected in the penthouse air handling unit room and two control samples were collected at the opposite side of the building in the upper atrium. The testing was completed by Chris Smithson and Jorden Velthuys. The sampling strategy is detailed below.

1. Firing range – 9 samples on various surfaces;
2. Corridor adjacent to the firing range – 3 samples above the ceiling on surfaces that have not been cleaned;
3. Exhaust duct shafts – 7 samples;



4. Penthouse air handling unit room – 20 samples from various surfaces including inside the supply air handling unit; and.
5. Upper atrium – 2 samples collected on top of a high window ledge and book shelf where the surface is not typically cleaned.

Due to elevated lead results measured in the corridor adjacent to the firing range, Chris Smithson collected additional lead wipe samples throughout the remainder of the sub-basement on February 29, 2016. Twenty-seven samples were collected from various surfaces throughout the remainder of the sub-basement and three field blank samples were collected.

2.0 CRITERIA

Pinchin is not aware of any Canadian or Manitoba regulatory criteria for the acceptable level of lead contamination on surfaces. For this project Pinchin will follow the requirements of the Department of National Defence (DND) document Decontamination Protocol for Indoor Firing Ranges, Chapter 42, Annex A, January 2003. The DND standard calls for a maximum of 100 micrograms per square foot ($\mu\text{g}/\text{ft}^2$) on walls, floor and ceilings, after cleanup of a firing range turned to another purpose.

3.0 METHODOLOGY

The wipe samples were collected following NIOSH Method 9100 (1994). The wipes were collected by donning clean disposable gloves and wiping a 10 cm by 10 cm area defined by a disposable paper template. Each wipe was used to wipe the sampling area three times as per the NIOSH method. Fresh gloves and template was used for each test. Field blanks were collected at a frequency of 1 per 10 field samples. The field blanks were collected at the beginning, in the middle, and at the end of sampling. The wipes were analysed to EPA Method SW 846 7420 at Scientific Analytical Institute (SAI) in Greensboro North Carolina. SAI is accredited for the analysis of lead in paint, soil, wipes air by the American Industrial Hygiene Association Environmental Lead Laboratory Accreditation Program. This program is equivalent to CALA as both agencies accredit to ISO 17025. Based on 10 cm X 10 cm wipes, the lower detection limit was 19 $\mu\text{g}/\text{ft}^2$.

4.0 FINDINGS

The lead wipe sample results are shown in the below table. Results in bold show concentrations of lead contamination above the Department of National Defence (DND) document Decontamination Protocol for Indoor Firing Ranges standard of a maximum of 100 $\mu\text{g}/\text{ft}^2$.

Sample	Location	Surface	Results ($\mu\text{g}/\text{ft}^2$)
LW-001	Sub-basement firing range, south side	Floor	25000
LW-002	Sub-basement firing range, sitting area	Top of electrical panel	1700

**Surface Lead Contamination Associated with Basement Firing Range**

1091 Portage Avenue, Winnipeg, MB
HDK Consulting Incorporated

March 16, 2016
Pinchin File: 111433

Sample	Location	Surface	Results ($\mu\text{g}/\text{ft}^2$)
LW-003	Sub-basement firing range, sitting area	Top of cabinet	2200
LW-004	Sub-basement firing range, north side	Floor	4800
LW-005	Sub-basement firing range, sitting area near entrance	Floor	1600
LW-006	Sub-basement firing range, west side	Wall	3200
LW-007	Sub-basement firing range, sitting area, north side	Wall	19
LW-008	Sub-basement firing range, east side	Wall	13000
LW-009	Sub-basement firing range, north side	Wood ceiling panel	< 19
LW-010	Field blank	N/A	ND
LW-011	Penthouse AHU Room	Inside AHU 9, fresh air intake	94
LW-012	Penthouse AHU Room	Inside AHU 9, motor section	5600
LW-013	Penthouse AHU Room	Inside AHU 9, behind fresh air intake filters	790
LW-014	4 th floor, northeast duct room	Duct F-13	120
LW-015	4 th floor, northeast duct room	Top of fan	< 19
LW-016	Field blank	N/A	< 19
LW-017	4 th floor, southwest duct room	Duct F-13	1600
LW-018	3 rd floor, southwest duct room	Duct F-13	140
LW-019	Field blank	N/A	ND
LW-020	3 rd floor, northeast duct room	Duct F-13	240
LW-021	2 nd floor, northeast duct room	Metal sheet on floor	330
LW-022	1 st floor, southwest duct room	Top of electrical panel	3200
LW-023	Sub-basement corridor adjacent to firing range, middle of corridor	Top of light fixture	39000
LW-024	Sub-basement corridor adjacent to firing range, south end	Top of light fixture	55000
LW-025	Sub-basement corridor adjacent to firing range, north end	Top of light fixture	660
LW-026	Penthouse AHU Room by AHU 13	Floor	430
LW-027	Penthouse AHU Room by AHU 9	Floor	91
LW-028	Penthouse AHU Room	Top of AHU 13	4400
LW-029	Penthouse AHU Room	Top of AHU 1	1300
LW-030	Penthouse AHU Room, south side	Top of shelf	2800

**Surface Lead Contamination Associated with Basement Firing Range**

1091 Portage Avenue, Winnipeg, MB
HDK Consulting Incorporated

March 16, 2016
Pinchin File: 111433

Sample	Location	Surface	Results (µg/ft²)
LW-031	Penthouse AHU Room by AHU 9	Duct, 10' high	210
LW-032	Penthouse AHU Room, east wall at south end	Wall	22
LW-033	Penthouse AHU Room, north wall	Wall	< 19
LW-034	Penthouse AHU Room, near AHU 9	Top of AHU control panel	390
LW-035	Penthouse AHU Room along west wall at south end	Top of panel	900
LW-036	Penthouse AHU Room near AHU 2	Duct, 10' high	570
LW-037	Penthouse AHU Room along east wall at south end	Top of panel	1600
LW-038	Penthouse AHU Room behind AHU 13	Top of fire hose panel	1300
LW-039	Penthouse AHU Room, west side near the middle	Floor	69
LW-040	Penthouse AHU Room near AHU 2	Duct, 18' high	8800
LW-041	Penthouse AHU Room above AHU 13	Exhaust duct	33000
LW-042	Penthouse AHU Room above AHU 9	Supply duct	1700
LW-043	Upper atrium	Top of book shelf	83
LW-044	Upper atrium	Top of window ledge	57
LW-045	Field blank	N/A	ND
LW-046	Sub-basement, Room S08/S106	Top of locker	450
LW-047	Field blank	N/A	ND
LW-048	Sub-basement, Room S08/106	Floor	760
LW-049	Sub-basement, Room S05, sewage pit area	Top of yellow cabinet	310
LW-050	Sub-basement, Room S05 near entrance	Floor	970
LW-051	Sub-basement, Room S05 near entrance	Top of duct for AHU5	3000
LW-052	Sub-basement, Room S10, storage room	Top of vault	43
LW-053	Sub-basement, Room S10, storage room	Top of duct	1900
LW-054	Sub-basement, Room S10, storage room, back of room	Top of shelf	130
LW-055	Sub-basement, Room S10, storage room	Top of mail slot stored on shelf	97

**Surface Lead Contamination Associated with Basement Firing Range**1091 Portage Avenue, Winnipeg, MB
HDK Consulting IncorporatedMarch 16, 2016
Pinchin File: 111433

Sample	Location	Surface	Results ($\mu\text{g}/\text{ft}^2$)
LW-056	Sub-basement, Room S10, middle of storage room	Floor	1000
LW-057	Sub-basement, Room S10, storage room near Room S06	Floor	560
LW-058	Sub-basement, Room S05 near entrance	Wall	29
LW-059	Sub-basement, Room S10, storage room	Glass of picture frame stored on shelf	40
LW-060	Sub-basement, Room S10, storage room, back of room	Top of small pillow	< 19
LW-061	Field blank	N/A	ND
LW-062	Sub-basement, Room S06 near entrance	Floor	860
LW-063	Sub-basement, janitor closet	Top of duct	10000
LW-064	Sub-basement, corridor adjacent to firing range near Room S05	Floor	570
LW-065	Sub-basement, corridor by Room S03	Floor	380
LW-066	Sub-basement, Room S122	Top of duct	620
LW-067	Sub-basement, men's washroom	Top of paper towel dispenser	19
LW-068	Sub-basement, Room S03/S08, ammo room	Top of light fixture	1400
LW-069	Sub-basement, Room S03/S08, ammo room	Floor	330
LW-070	Sub-basement, Room S04	Top of cabinet	400
LW-071	Sub-basement, Room S04	Top of counter	130
LW-072	Sub-basement, Room S09, elevator machine room	Top of panel	310
LW-073	Sub-basement, stairwell by Room S-06	Top of bottom stair	81
LW-074	Sub-basement, Stairwell # 3 by Room S01	Top of bottom stair	23
LW-075	Field blank	N/A	ND

ND: Not Detected



5.0 DISCUSSION

The lead wipe results indicate that there is significant lead contamination on surfaces in the sub-basement firing range, ceiling space in the corridor adjacent to the firing range and penthouse air handling unit room. There is a moderate amount of lead contamination in the southwest duct shaft rooms and throughout the sub-basement. In the sub-basement the higher levels of lead contamination was found on top of ducts with moderate levels of lead contamination on the floors and other surfaces that are not routinely cleaned such as on shelves. No lead contamination was found on stored items in the storage units. The northeast duct shaft rooms have low levels of lead contamination. The results were not unexpected as firing ranges are typically contaminated with surface lead and it is expected that there would be some leakage from the ducts and filters, and also from transfer of dust by tracking out of the equipment.

The elevated lead contamination found throughout the sub-basement and penthouse indicates that there is a leakage of lead. This contamination may have come from airborne dust leaking from the exhaust duct or from the firing range through penetrations in the wall between the range and the adjacent areas, or from tracking of dust from the firing range.

6.0 RECOMMENDATION

Pinchin recommends the following:

1. Retain a hazardous materials abatement contractor to conduct a clean-up of lead-contaminated surfaces in the firing range and penthouse mechanical room prior to the firing range upgrade and throughout the sub-basement and duct shafts;
2. Routinely inspect the firing range exhaust ducts for leaks and repair any leaks to ensure that no further lead contamination occurs; and
3. Inspect the walls around the firing range to check for possible transport routes. Seal any openings that have the potential to transport airborne dust to other areas of the building.

7.0 LIMITATIONS

The work performed by Pinchin was conducted in accordance with generally accepted engineering or scientific practices current in this geographical area at the time the work was performed. No warranty is either expressed or implied by furnishing written reports or findings. The Client acknowledges that subsurface and concealed conditions may vary from those encountered or inspected. Pinchin can only comment on the environmental conditions observed on the date(s) the survey is performed. The work is limited to those materials or areas of concern identified by the Client or outlined in our proposal. Other areas of concern may exist but were not investigated within the scope of this assignment.



Pinchin makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters mentioned in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretations and these interpretations may change over time and we undertake no, and expressly disclaim, obligation to advise the Client of such change. Pinchin accepts no responsibility for consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

The liability of Pinchin or our officers, directors, shareholders or staff will be limited to the lesser of the fees paid or actual damages incurred by the Client. Pinchin will not be responsible for any consequential or indirect damages. Pinchin will only be liable for damages resulting from the negligence of Pinchin. Pinchin will not be liable for any losses or damage if the Client has failed, within a period of two years following the date upon which the claim is discovered (Claim Period), to commence legal proceedings against Pinchin to recover such losses or damage unless the laws of the jurisdiction which governs the Claim Period which is applicable to such claim provides that the applicable Claim Period is greater than two years and cannot be abridged by the contract between the Client and Pinchin, in which case the Claim Period shall be deemed to be extended by the shortest additional period which results in this provision being legally enforceable.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.



Surface Lead Contamination Associated with Basement Firing Range

1091 Portage Avenue, Winnipeg, MB
HDK Consulting Incorporated

March 16, 2016
Pinchin File: 111433

8.0 CLOSURE

If you have any questions, please contact the undersigned at 204.452.0983 ext. 2245.

Pinchin Ltd.

Prepared by:

Reviewed by:

Chris Smithson

Project Manager

204.452.0983 ext. 2245

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Bruce Stewart

Executive Vice President, Technical Services

905.363.1388

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\\WINNIPEG\Job\111000s\111433 HDKCONSULTING,1091PortageAv,LEAD,CONS\Report\111433 Report Lead Wipe Sampling 1091 Portage HDK March 16, 2016.docx

Template: Master Letter Template, December 29, 2015



Analysis for Lead Concentration in Wipe Samples

by Flame Atomic Absorption Spectroscopy
EPA SW-846 3050B/6010C/7420



Customer: Pinchin Ltd.
2470 Milltower Court
Mississauga ON L5N 7W5

Attn: Chris Smithson
J Velthuys

Lab Order ID: 1602508
Analysis ID: 1602508_PBW
Date Received: 2/8/2016
Date Reported: 2/12/2016

Project: Lead Sampling RCMP D Division

Sample ID	Description	Area	Concentration	Concentration
Lab Sample ID	Lab Notes	(ft ²)	(µg)	(µg/ft ²)
LW-001	Firing range floor - south	0.108	2700	25000
1602508PBW_1				
LW-002	Firing range - sitting area on-top of electrical panel	0.108	180	1700
1602508PBW_2				
LW-003	Firing range - sitting area on-top of cabinet	0.108	240	2200
1602508PBW_3				
LW-004	Firing range - floor north	0.108	520	4800
1602508PBW_4				
LW-005	Firing range - sitting area floor near entrance	0.108	170	1600
1602508PBW_5				
LW-006	Firing range wall - west	0.108	350	3200
1602508PBW_6				
LW-007	Firing range - sitting area north wall	0.108	2.1	19
1602508PBW_7				
LW-008	Firing range wall - east	0.108	1400	13000
1602508PBW_8				
LW-009	Firing range - wood panels on ceiling north side	0.108	< 2.0	< 19
1602508PBW_9				
LW-010	Field blank - firing range	0.108	< 2.0	< 19
1602508PBW_10				

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Daniel Olson (45)

Analyst

Scientific Analytical Institute, Inc. 4604 Dundas Dr. Greensboro, NC 27407 (336) 292-3888

Laboratory Director



Analysis for Lead Concentration in Wipe Samples

by Flame Atomic Absorption Spectroscopy
EPA SW-846 3050B/6010C/7420



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2470 Milltower Court
Mississauga ON L5N 7W5

Attn: Chris Smithson
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Lab Order ID: 1602508
Analysis ID: 1602508_PBW
Date Received: 2/8/2016
Date Reported: 2/12/2016

Project: Lead Sampling RCMP D Division

Sample ID	Description	Area	Concentration	Concentration
Lab Sample ID	Lab Notes	(ft ²)	(µg)	(µg/ft ²)
LW-011	Penthouse AHU #9 - inside fresh air intake	0.108	10.	94
1602508PBW_11				
LW-012	Penthouse AHU #9 - inside motor section	0.108	600	5600
1602508PBW_12				
LW-013	Penthouse AHU #9 - inside behind fresh air intake filters	0.108	86	790
1602508PBW_13				
LW-014	4th floor - NE duct room - exterior exhaust duct F-13	0.108	13	120
1602508PBW_14				
LW-015	4th floor - NE duct room - on top of the fan by F-13	0.108	< 2.0	< 19
1602508PBW_15				
LW-016	Field blank	0.108	< 2.0	< 19
1602508PBW_16				
LW-017	4th floor SW duct room - duct 13 range exhaust	0.108	170	1600
1602508PBW_17				
LW-018	3rd floor SW duct room - duct 13	0.108	15	140
1602508PBW_18				
LW-019	Field blank	0.108	< 2.0	< 19
1602508PBW_19				
LW-020	3rd floor NE duct room - duct 13	0.108	26	240
1602508PBW_20				

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Laboratory Director



Analysis for Lead Concentration in Wipe Samples

by Flame Atomic Absorption Spectroscopy
EPA SW-846 3050B/6010C/7420



Customer: Pinchin Ltd.
2470 Milltower Court
Mississauga ON L5N 7W5

Attn: Chris Smithson
J Velthuys

Lab Order ID: 1602508
Analysis ID: 1602508_PBW
Date Received: 2/8/2016
Date Reported: 2/12/2016

Project: Lead Sampling RCMP D Division

Sample ID	Description	Area (ft ²)	Concentration (µg)	Concentration (µg/ft ²)
Lab Sample ID	Lab Notes			
LW-021	2nd floor NE duct room - metal sheet on floor	0.108	35	330
1602508PBW_21				
LW-022	1st floor SW duct room - on electrical panel	0.108	350	3200
1602508PBW_22				
LW-023	Corridor adjacent to firing range on top of light fixture - middle of hall	0.108	4200	39000
1602508PBW_23				
LW-024	Corridor adjacent to firing range on top of light fixture - south hall	0.108	5900	55000
1602508PBW_24				
LW-025	Corridor adjacent to firing range on top of light fixture - north hall	0.108	71	660
1602508PBW_25				
LW-026	Penthouse - floor by AHU 13	0.108	46	430
1602508PBW_26				
LW-027	Penthouse - floor by AHU 9	0.108	9.9	91
1602508PBW_27				
LW-028	Penthouse - top of AHU 13	0.108	470	4400
1602508PBW_28				
LW-029	Penthouse - top of AHU 1	0.108	140	1300
1602508PBW_29				
LW-030	Penthouse - south shelf by AHU 13	0.108	300	2800
1602508PBW_30				

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Daniel Olson (45)

Analyst

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Laboratory Director

(336) 292-3888



Analysis for Lead Concentration in Wipe Samples

by Flame Atomic Absorption Spectroscopy
EPA SW-846 3050B/6010C/7420



Customer: Pinchin Ltd.
2470 Milltower Court
Mississauga ON L5N 7W5

Attn: Chris Smithson
J Velthuys

Lab Order ID: 1602508
Analysis ID: 1602508_PBW
Date Received: 2/8/2016
Date Reported: 2/12/2016

Project: Lead Sampling RCMP D Division

Sample ID	Description	Area	Concentration	Concentration
Lab Sample ID	Lab Notes	(ft ²)	(µg)	(µg/ft ²)
LW-031	Penthouse - 10 foot ducting by AHU 9	0.108	23	210
1602508PBW_31				
LW-032	Penthouse - east wall @ south end	0.108	2.4	22
1602508PBW_32				
LW-033	Penthouse - north wall	0.108	< 2.0	< 19
1602508PBW_33				
LW-034	Penthouse - on top of AHU control panel near AHU 9	0.108	42	390
1602508PBW_34				
LW-035	Penthouse - on top of panel along the west wall at south end	0.108	97	900
1602508PBW_35				
LW-036	Penthouse - 10 foot ducting near AHU 2	0.108	62	570
1602508PBW_36				
LW-037	Penthouse - on top of panel along the east wall at south end	0.108	180	1600
1602508PBW_37				
LW-038	Penthouse - on top of fire hose panel behind AHU 13	0.108	140	1300
1602508PBW_38				
LW-039	Penthouse - floor at west side near middle	0.108	7.4	69
1602508PBW_39				
LW-040	Penthouse - 18 foot ducting near AHU 2	0.108	950	8800
1602508PBW_40				

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Analyst

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Laboratory Director



Analysis for Lead Concentration in Wipe Samples

by Flame Atomic Absorption Spectroscopy
EPA SW-846 3050B/6010C/7420



Customer: Pinchin Ltd.
2470 Milltower Court
Mississauga ON L5N 7W5

Attn: Chris Smithson
J Velthuys

Lab Order ID: 1602508
Analysis ID: 1602508_PBW
Date Received: 2/8/2016
Date Reported: 2/12/2016

Project: Lead Sampling RCMP D Division

Sample ID	Description	Area (ft ²)	Concentration (µg)	Concentration (µg/ft ²)
Lab Sample ID	Lab Notes			
LW-041	Penthouse - exhaust duct above AHU 13	0.108	3600	33000
1602508PBW_41				
LW-042	Penthouse - supply ducting AHU 9 approx 14 feet high	0.108	190	1700
1602508PBW_42				
LW-043	Penthouse Atrium - On Top of Bookshelf	0.108	9.0	83
1602508PBW_43				
LW-044	Penthouse Atrium - Upper Window Ledge	0.108	6.2	57
1602508PBW_44				
LW-045	Field Blank	0.108	< 2.0	< 19
1602508PBW_45				

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Laboratory Director

11002508

Version 1-15-2012

Client:	Pinchin Environmental Ltd.	*Instructions: Use Column "B" for your contact info	Invoice to:
Contact:	Chris Smithson		Contact name here
Address:	2470 Milltower court	To See an Example Click the bottom Example Tab.	Email address here
Phone:	905-363-0678	Enter samples between "<<" and ">>" Begin Samples with a "<<" "above the first sample" and end with a ">>" below the last sample. Only Enter your data on the first sheet "Sheet1"	
Fax:	905-363-0681		
Email:	csmithson@pinchin.com jvelthuys@pinchin.com	Scientific Analytical Institute	
Project:	Lead Sampling RCMP D Division		
Client Notes:	45 Samples	Note: Data 1 and Data 2 are optional fields that do not show up on the official report, however they will be included in the electronic data returned to you to facilitate your reintegration of the report data.	
P.O. #.	111433		4604 Dundas Dr.
Date Submitted:	Feb/4/2016		Greensboro, NC 27407
Analysis:	Lead Wipe by Flame		Phone: 336.292.3888
TurnAroundTime:	5 days		Fax: 336.292.3313
			Email: lab@sailab.com

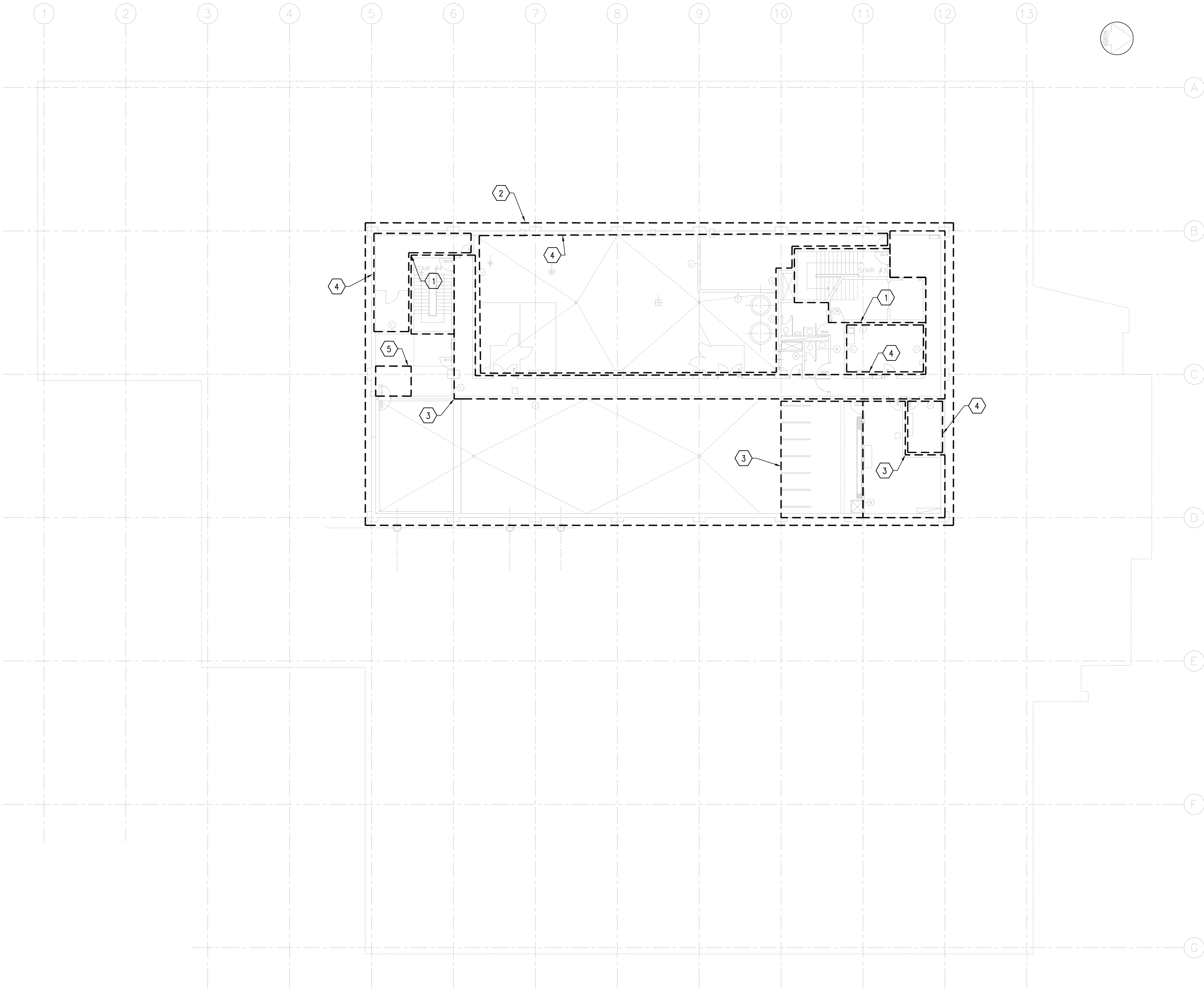
Sample Number	Data 1 (Lab use only)	Sample Description	Data 2 (Lab use only)
<<			
LW - 001		Firing Range Floor - South	
LW - 002		Firing Range - Sitting Area On-Top of Electrical Panel	
LW - 003		Firing Range - Sitting Area On-Top of Cabinet	
LW - 004		Firing Range - Floor North	
LW - 005		Firing Range - Sitting Area Floor Near Entrance	
LW - 006		Firing Range Wall - West	
LW - 007		Firing Range - Sitting Area North Wall	
LW - 008		Firing Range Wall - East	
LW - 009		Firing Range - Wood Panels On Ceiling North Side	
LW - 010		Field Blank - Firing Range	
LW - 011		Penthouse AHU #9 - Inside Fresh Air Intake	
LW - 012		Penthouse AHU#9 - Inside Motor Section	
LW - 013		Penthouse AHU #9 - Inside Behind Fresh Air Intake Filters	
LW - 014		4th Floor - NE Duct Room - Exterior exhaust duct F-13	
LW - 015		4th Floor - NE Duct Room - On Top Of The Fan by F-13	
LW - 016		Field Blank	

Accepted ☒Rejected ☐

MSA
2/18 10PM

LW - 017	4th Floor SW Duct Room - Duct 13 Range Exhaust
LW - 018	3rd Floor SW Duct Room - Duct 13
LW - 019	Field Blank
LW - 020	3rd Floor NE Duct Room - Duct 13
LW - 021	2nd Floor NE Duct Room - Metal Sheet on Floor
LW - 022	1st Floor SW Duct Room - On Electrical Panel
LW - 023	Corridor Adjacent to Firing Range On Top of Light Fixture - Middle of Hall
LW - 024	Corridor Adjacent to Firing Range On Top of Light Fixture - South Hall
LW - 025	Corridor Adjacent to Firing Range On Top of Light Fixture - North Hall
LW - 026	Penthouse - Floor by AHU 13
LW - 027	Penthouse - Floor by AHU 9
LW - 028	Penthouse - Top of AHU 13
LW - 029	Penthouse - Top of AHU 1
LW - 030	Penthouse - South Shelf by AHU 13
LW - 031	Penthouse - 10 Foot Ducting by AHU 9
LW - 032	Penthouse - East Wall @ South End
LW - 033	Penthouse - North Wall
LW - 034	Penthouse - On Top of AHU Control Panel Near AHU 9
LW - 035	Penthouse - On Top of Panel Along the West Wall at South End
LW - 036	Penthouse - 10 Foot Ducting Near AHU 2
LW - 037	Penthouse - On Top of Panel Along the East Wall at South End
LW - 038	Penthouse - On Top Of Fire Hose Panel Behind AHU 13
LW - 039	Penthouse - Floor at West Side Near Middle
LW - 040	Penthouse - 18 Foot Ducting Near AHU 2
LW - 041	Penthouse - Exhaust Duct above AHU 13
LW - 042	Penthouse - Supply Ducting AHU 9 Approx. 14 feet high
LW - 043	Penthouse Atrium - On Top of Bookshelf
LW - 044	Penthouse Atrium - Upper Window Ledge
LW - 045	Field Blank
>>	

PORTAGE AVENUE



1 SUB BASEMENT - LEAD ABATEMENT
L-1 1:150

GENERAL NOTES:

1. REFER TO SECTION 028312 FOR REMEDIATION PROCEDURES FOR PROJECT.

DRAWING KEYNOTES :

1. OUTSIDE AREA OF ABATEMENT.
2. AREA OF ABATEMENT.
3. CEILING TILES.
4. EPOXY FLOORING.
5. MECHANICAL SHAFT.
6. PERMANENT HOARDING.
7. AHU 5 TO CLEAN

PRELIMINARY
NOT FOR CONSTRUCTION



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Mechanical | Electrical | Communications | Security Engineering

5		
4		
3		
2		
1	ADDENDUM #1	2017-02-26
0	ISSUED FOR REVIEW	2017-02-22
Revision	Description	Date

Client client

ROYAL CANADIAN
MOUNTED POLICE
D-DIVISION

1091 PORTAGE AVENUE
WINNIPEG, MANITOBA

Project Projet

WINNIPEG, MANITOBA
1091 PORTAGE AVENUE
D-DIVISION HEADQUARTERS

FIRING RANGE UPGRADE

Designed by K. ORR	Conçu par
Drawn by I. SANTOS	Dessiné par
Approved by K. ORR	Approuvé par
PWSSC Project Manager PAUL DUCHARME	Administrateur de Projets TPSGC
Drawing title	Titre du dessin

LEAD ABATEMENT
SUB-BASEMENT

Project no./No. du projet	Drawing no./No. du dessin	Revision no.
	L-1 OF 7	0

GENERAL NOTES:
1. REFER TO SECTION 028312 FOR REMEDIATION PROCEDURES FOR PROJECT.

DRAWING KEYNOTES :

1. OUTSIDE AREA OF ABATEMENT.
2. AREA OF ABATEMENT.
3. CEILING TILES.
4. EPOXY FLOORING.
5. MECHANICAL SHAFT.
6. PERMANENT HOARDING.
7. AHU 5 TO CLEAN

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PORTAGE AVENUE

DOMINION STREET

1 BASEMENT - LEAD ABATEMENT
L-2 1:150

5		
4		
3		
2		
1	ADDENDUM #1	2017-02-28
0	ISSUED FOR REVIEW	2017-02-22
Revision	Description	Date

Client client

ROYAL CANADIAN
MOUNTED POLICE
D-DIVISION

1091 PORTAGE AVENUE
WINNIPEG, MANITOBA

Project Projet
WINNIPEG, MANITOBA
1091 PORTAGE AVENUE
D-DIVISION HEADQUARTERS
FIRING RANGE UPGRADE

Designed by K. ORR	Conçu par
Drawn by I. SANTOS	Dessiné par
Approved by K. ORR	Approuvé par
PWGSC Project Manager PAUL DUCHARME	Administrateur de Projets TPSGC
Drawing title	Titre du dessin

LEAD ABATEMENT
BASEMENT

Project no./No. du projet	Drawing no./No. du dessin	Revision no.
	L-2 OF 7	0

GENERAL NOTES:
1. REFER TO SECTION 028312 FOR REMEDIATION PROCEDURES FOR PROJECT.

DRAWING KEYNOTES :

1. OUTSIDE AREA OF ABATEMENT.
2. AREA OF ABATEMENT.
3. CEILING TILES.
4. EPOXY FLOORING.
5. MECHANICAL SHAFT.
6. PERMANENT HOARDING.
7. AHU 5 TO CLEAN

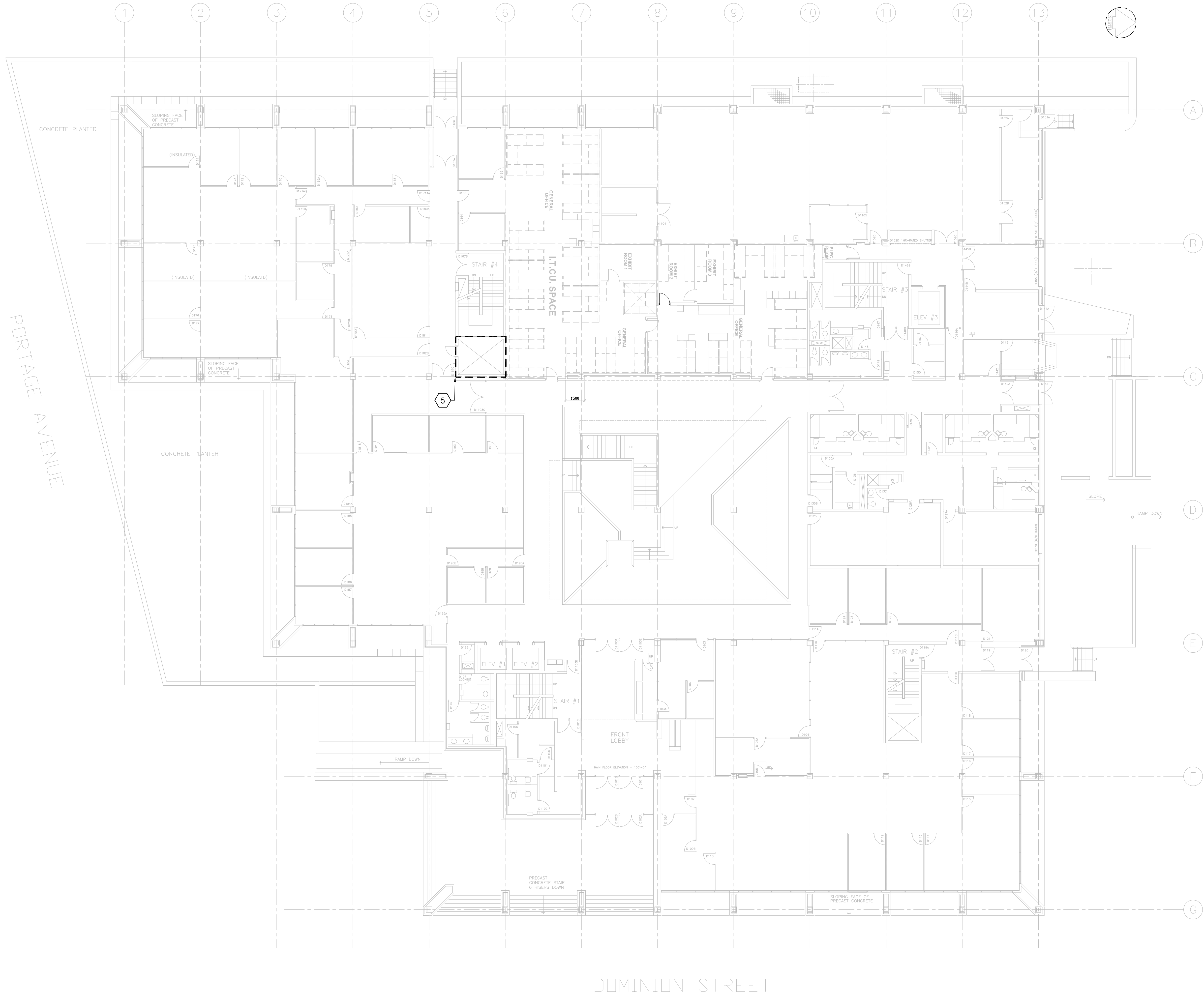
REAL PROPERTY SERVICES
Western Region
SERVICES IMMOBILIERS
Région de l'ouest

PRELIMINARY
NOT FOR CONSTRUCTION



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Mechanical | Electrical | Communications | Security Engineering



1 MAIN FLOOR - LEAD ABATEMENT
L-3 1:150

5		
4		
3		
2		
1	ADDENDUM #1	2017-02-28
0	ISSUED FOR REVIEW	2017-02-22
Revision	Description	Date

Client client

ROYAL CANADIAN
MOUNTED POLICE
D-DIVISION

1091 PORTAGE AVENUE
WINNIPEG, MANITOBA

Project Projet

WINNIPEG, MANITOBA
1091 PORTAGE AVENUE
D-DIVISION HEADQUARTERS

FIRING RANGE UPGRADE

Designed by Conçu par

K. ORR

Drawn by Dessiné par

I. SANTOS

Approved by Approuvé par

K. ORR

PWSC Project Manager Administrateur de Projets TPSC

PAUL DUCHARME

Drawing title Titre du dessin

LEAD ABATEMENT
MAIN FLOOR

Project no./No. du projet Drawing no./No. du dessin Revision no.

L-3
OF 7

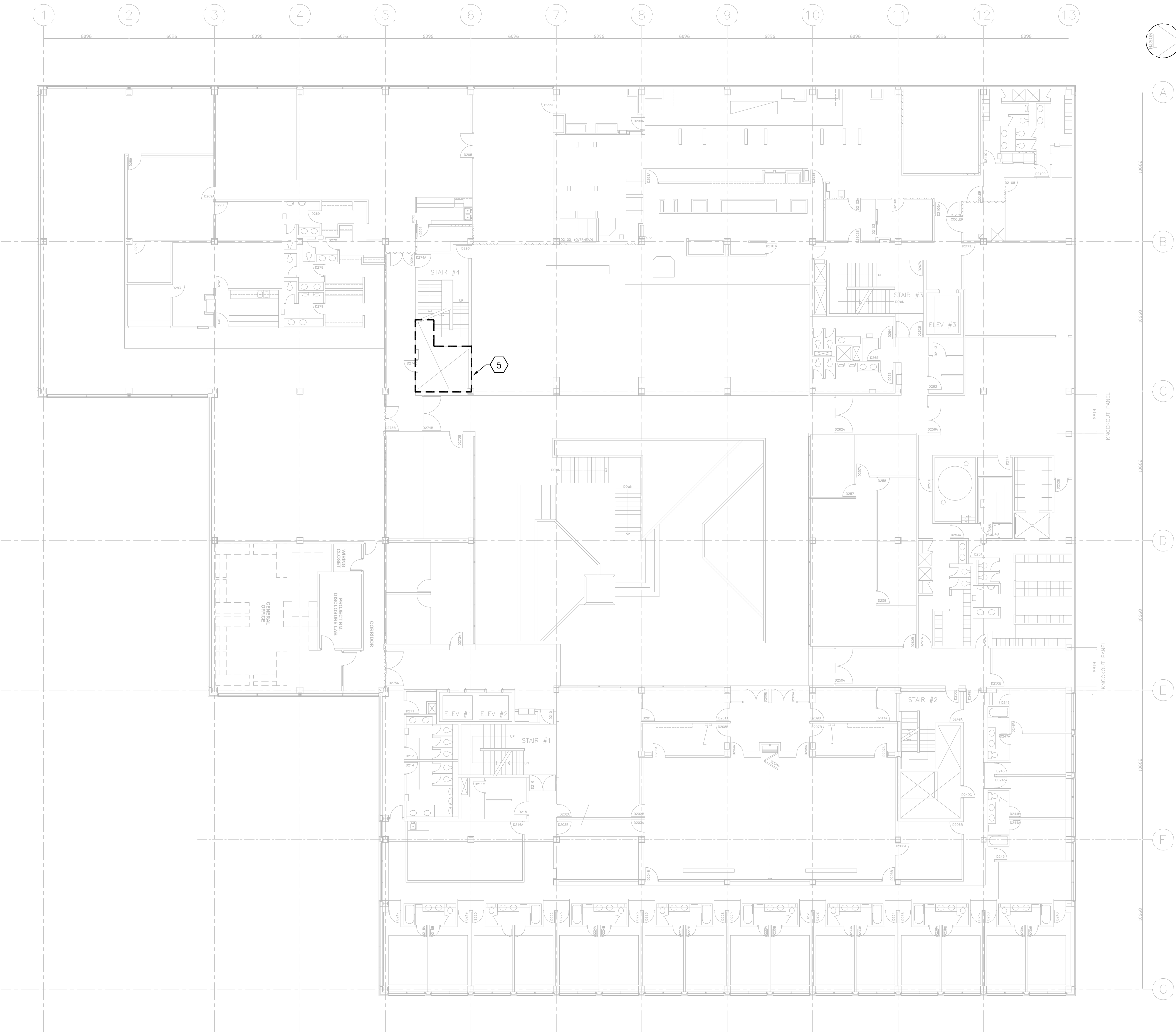
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GENERAL NOTES:
1. REFER TO SECTION 028312 FOR REMEDIATION PROCEDURES FOR PROJECT.

DRAWING KEYNOTES :

1. OUTSIDE AREA OF ABATEMENT.
2. AREA OF ABATEMENT.
3. CEILING TILES.
4. EPOXY FLOORING.
5. MECHANICAL SHAFT.
6. PERMANENT HOARDING.
7. AHU 5 TO CLEAN

PRELIMINARY
NOT FOR CONSTRUCTION



DOMINION STREET

1
L-4
1:150
SECOND FLOOR - LEAD ABATEMENT

5		
4		
3		
2		
1	ADDENDUM #1	2017-02-28
0	ISSUED FOR REVIEW	2017-02-22
Revision	Description	Date

Client client

ROYAL CANADIAN
MOUNTED POLICE
D-DIVISION

1091 PORTAGE AVENUE
WINNIPEG, MANITOBA

Project Projct

WINNIPEG, MANITOBA
1091 PORTAGE AVENUE
D-DIVISION HEADQUARTERS

FIRING RANGE UPGRADE

Designed by Conçu par

K. ORR

Drawn by Dessiné par

I. SANTOS

Approved by Approuvé par

K. ORR

PWGSC Project Manager Administrateur de Projets TPSC

PAUL DUCHARME

Drawing title Titre du dessin

LEAD ABATEMENT
SECOND FLOOR

Project no./No. du projet Drawing no./No. du dessin Revision no.

L-4
OF 7

0

GENERAL NOTES:
1. REFER TO SECTION 028312 FOR REMEDIATION PROCEDURES FOR PROJECT.

DRAWING KEYNOTES :

1. OUTSIDE AREA OF ABATEMENT.
2. AREA OF ABATEMENT.
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4. EPOXY FLOORING.
5. MECHANICAL SHAFT.
6. PERMANENT HOARDING.
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PRELIMINARY
NOT FOR CONSTRUCTION

5		
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1	ADDENDUM #1	2017-02-28
0	ISSUED FOR REVIEW	2017-02-22
Revision	Description	Date

Client client

ROYAL CANADIAN
MOUNTED POLICE
D-DIVISION

1091 PORTAGE AVENUE
WINNIPEG, MANITOBA

Project Proj

WINNIPEG, MANITOBA
1091 PORTAGE AVENUE
D-DIVISION HEADQUARTERS

FIRING RANGE UPGRADE

Designed by Conçu par

K. ORR

Drawn by Dessiné par

I. SANTOS

Approved by Approuvé par

K. ORR

PWSC Project Manager Administrateur de Projets TPSC

PAUL DUCHARME

Drawing title Titre du dessin

LEAD ABATEMENT
THIRD FLOOR

Project no./No. du projet Drawing no./No. du dessin Revision no.

L-5
OF 7

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PORTAGE AVENUE

DOMINION STREET

1 THIRD FLOOR - LEAD ABATEMENT
L-5 1:150

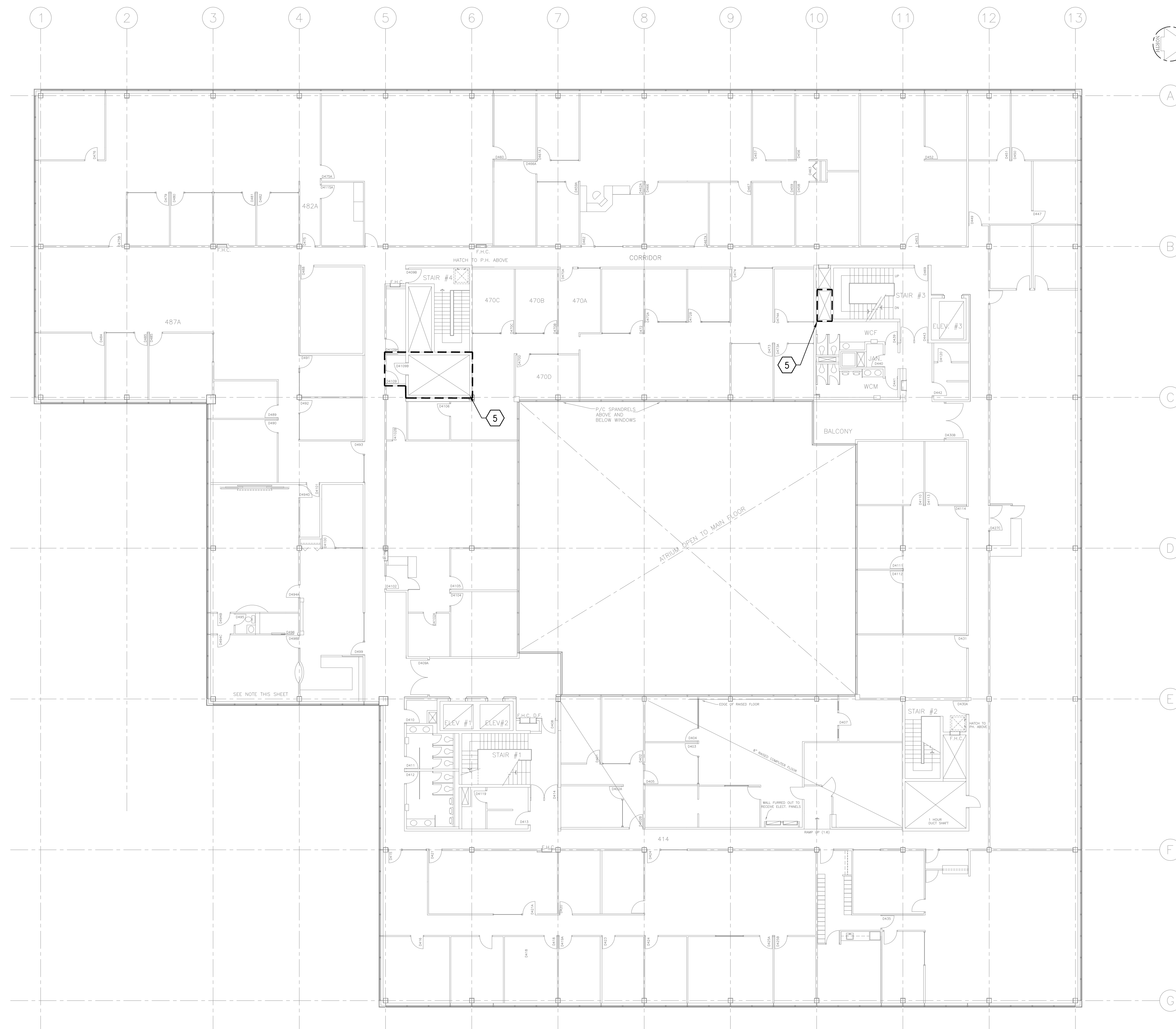
PRELIMINARY
NOT FOR CONSTRUCTION



1. REFER TO SECTION 028312 FOR REMEDIATION PROCEDURES FOR PROJECT.

DRAWING KEYNOTES :

1. OUTSIDE AREA OF ABATEMENT.
2. AREA OF ABATEMENT.
3. CEILING TILES.
4. EPOXY FLOORING.
5. MECHANICAL SHAFT.
6. PERMANENT HOARDING.
7. AHU 5 TO CLEAN



1 FOURTH FLOOR - LEAD ABATEMENT

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1	ADDENDUM #1	2017-02-28
0	ISSUED FOR REVIEW	2017-02-22
Revision	Description	Date

Client	clie
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**ROYAL CANADIAN
MOUNTED POLICE
D-DIVISION**

1091 PORTAGE AVENUE
WINNIPEG, MANITOBA

Project	Project
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WINNIPEG, MANITOBA
1091 PORTAGE AVENUE
D-DIVISION HEADQUARTERS

FIRING RANGE UPGRADE

Designed by	Concu p
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Designed by
K. ORR

Drawn by	Designing by
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Drawn by
J. SANTOS

I. SANTOS	

Approved by: Approuvé par:
K. ORR

K. URR

PWGSC Project Manager
DAUL DUCHARME

PAUL DUCHARME

Drawing title	Titre du dessin
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LEAD ABATEMENT

LEAD ABATEMENT

FOURTH FLOOR

[illegible]

Project no./No. du projet	Drawing no./No. du dessin	Revision no.
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[illegible]

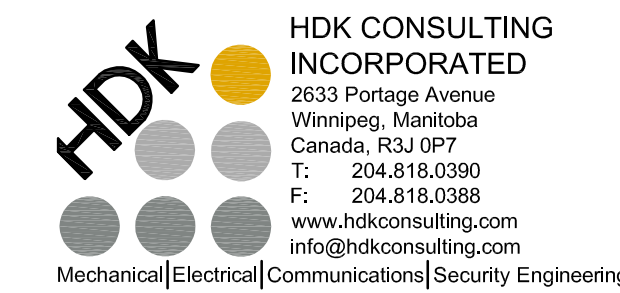
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PRELIMINARY
NOT FOR CONSTRUCTION



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1	ADDENDUM #1	2017-02-28
0	ISSUED FOR REVIEW	2017-02-22
Revision	Description	Date

Client	client
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**ROYAL CANADIAN
MOUNTED POLICE
D-DIVISION**

1091 PORTAGE AVENUE
WINNIPEG, MANITOBA

Project	Project
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**WINNIPEG, MANITOBA
1091 PORTAGE AVENUE
D-DIVISION HEADQUARTERS**

FIRING RANGE UPGRADE

Designed by	Çağrı pa
K. ORR	

Drawn by **I. SANTOS** Dessiné par

Approved by K. ORR	Approved by
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Drawing title	Titre du dessin
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**LEAD ABATEMENT
PENTHOUSE**

Project no./No. du projet	Drawing no./No. du dessin	Revision no.
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OF 7

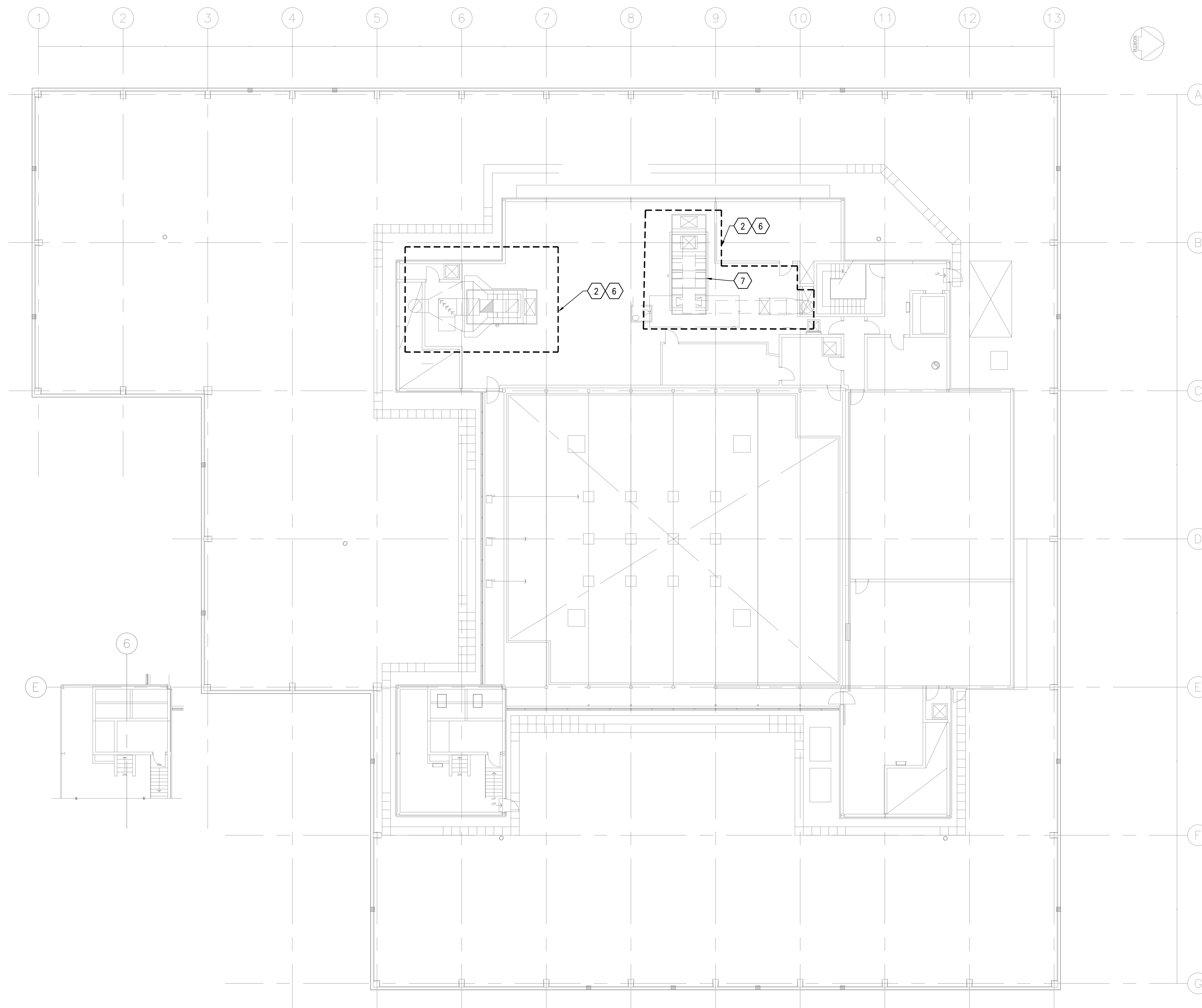
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GENERAL NOTES:

1. REFER TO SECTION 028312 FOR REMEDIATION PROCEDURES FOR PROJECT.

DRAWING KEYNOTES :

1. OUTSIDE AREA OF ABATEMENT.
2. AREA OF ABATEMENT.
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4. EPOXY FLOORING.
5. MECHANICAL SHAFT.
6. PERMANENT HOARDING.
7. AHU 5 TO CLEAN



1 PENTHOUSE - LEAD ABATEMENT
L-7 1:150